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THE AGRICULTURAL STUDENT

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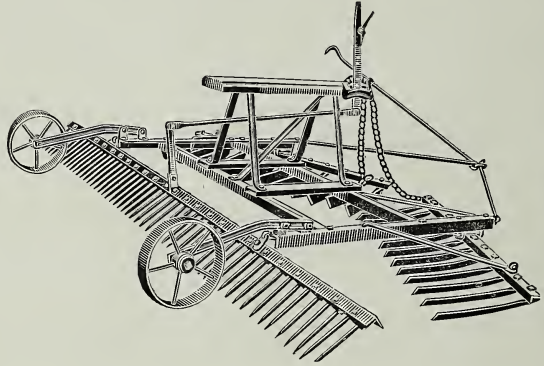
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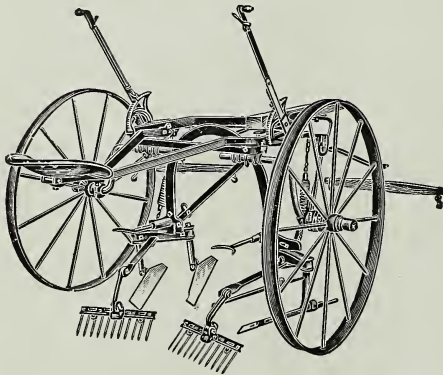
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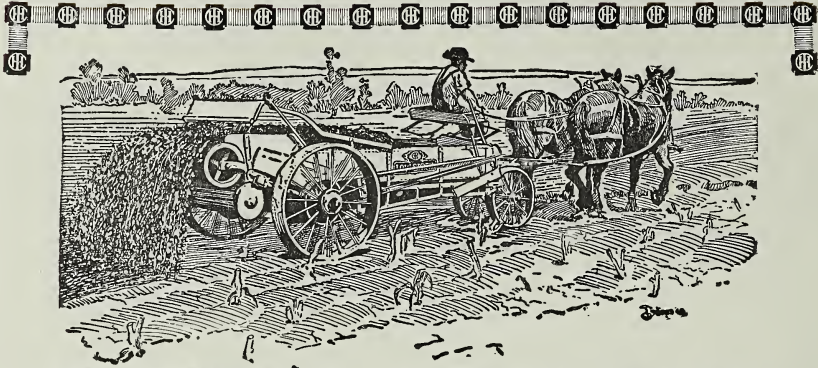
If you could open and read the letters I get, voicing the appreciation of hundreds of stockmen and farmers—who have taken advantage of my liberal offer, you would not delay a minute in sending me the coupon requesting enough Sal-Vet to feed your stock 60 days, especially when **I do it before you pay.** Now fill in the coupon, telling how many head of stock you are feeding—mail at once. Sal-Vet costs but one-twelfth of a cent per day for each hog or sheep.

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AGS 11-13



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And, far more important, if you buy an I H C spreader one ton of manure will go as far as two tons spread by hand, with the same good effect on the soil, and it will all be spread evenly.

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are farm necessities. The man who uses one will get the price of it back in increased crops before its newness has worn off.

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In Every Package.

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No person is ever asked to favor "Wyandotte" until he is absolutely convinced of every claim for it. This always has been the understanding and why we always say—if not all we claim for it, it costs you nothing.

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COLUMBUS, OHIO



CONTENTS

COVER PAGE—Spotswood Daisy Pearl.	Page
FRONTISPIECE	184
THE RELATION OF DAIRY TYPE TO MILK PRODUCTION—	
Prof. H. H. Wing, Cornell University.....	185
PREPARATION FOR THE DAIRY BUSINESS—	
J. H. Baird, Gates Mills, Ohio.....	187
THE VALUE OF ADVANCED REGISTRY AND REGISTRY OF MERIT	
RECORDS—	
Prof. Oscar Erf, Ohio State University.....	189
THE PLACE OF DAIRYING IN OHIO AGRICULTURE—	
Prof. O. C. Cunningham, Ohio State University.....	190
THE ADVISABILITY OF LINE BREEDING IN THE DAIRY HERD—	
B. J. Ruetenik, Mgr. Good Hold Farm.....	193
THE DAIRY EXHIBIT AT THE STATE FAIR—	
Robert L. Fleming, '14.....	194
AN AFTERNOON WITH A SUCCESSFUL DAIRYMAN—	
J. W. Henceroth, '14.....	195
THE EVOLUTION OF THE DAIRY INDUSTRY—	
W. L. Clevenger, Ohio State University.....	198
SOME PRACTICAL POINTS ON FEEDING—	
Alexander Watts, Novelty, Ohio.....	201
THE PLEASURES OF OWNING A PURE BRED HERD—	
Hal H. Hill, Wickliffe, Ohio.....	203
SATISFACTION IN DAIRY PURE BREDS—	
John Sherwin, Willoughby, Ohio.....	205
SOME FACTS CONCERNING MILK DISTRIBUTION—	
Robert C. Goldbach, '14.....	206
THE NATIONAL DAIRY SHOW—	
J. W. Henceroth, '14.....	208
EDITORIALS	210
SPECIALS	214
DEPARTMENTS	216-226
NEWS NOTES	227



—Courtesy Ayrshire Breeders' Association.
FIRST PRIZE HERD AT THE NATIONAL DAIRY SHOW, 1912.
Owned by Adam Seitz, Waukesha, Wis.

THE AGRICULTURAL STUDENT

Vol. XX.

OHIO STATE UNIVERSITY, COLUMBUS, NOVEMBER, 1913

No. 3

The Relation of Dairy Type to Milk Production

H. H. WING

Department of Animal Husbandry, Cornell University

THE characteristics and conformation that are usually associated with what is known as the "dairy type" are generally understood and recognized by students of dairy production, and there is a fairly general agreement among such students as to what constitutes dairy type. Still, if those who have given the study of this subject the most attention were asked to show the relation between dairy type and milk production from a physiological standpoint, it is altogether likely they would have considerable difficulty in so doing. Without going into details, the dairy type may be described as that in which the animal is characteristically wedge shaped with the wide part of the wedge toward the rear, where the form is spare with an absence of muscular development especially along the ribs and loins and on the thighs and shoulders; where the skin is mellow and loose and the hair fine and soft with abundant secretion, where the udder is large and capacious and symmetrically developed with the teats of a convenient size and evenly placed; and where the internal organs, particularly those of the chest and abdomen are large and fully developed. Certain minor characteristics of the head, neck, back and ribs are also taken into consideration and go to make up the ideal dairy type.

From the standpoint of the relation of the dairy type to milk production, the characters of such a type may be

conveniently classified into three groups. First, those of the udder itself and its appendages and accessories. Second, those characters that indicate size and capacity of the vital organs. This would include the muzzle, throat, nostrils, size and capacity of the chest and size and capacity of the abdomen together with the external veins that indicate the character of the circulation. Third, those characters that we find associated with dairy production such as wedge shape; spareness of form; thinness of the withers; prominence of the spine; openness of the chine, and length, width and levelness of the hips and pelvis.

In respect to these three groups, it is very likely that all would concede that size and capacity of the udder is intimately and logically associated with the capacity to secrete. Unless the udder encloses a large gland composed of active secreting units or follicles, there cannot be very extensive secretion. This, of course, presupposes that various extraneous matters such as fatty tissue, character of the attachments and so forth are taken into consideration in estimating the real and apparent size of the udder. The capacity to secrete must be directly related to the number of secreting follicles going to make up the udder.

In considering the second group, it is not difficult to see that capacity for production must be closely related with the important vital functions, respira-

tion, digestion and circulation and without the capacity for the full development of these functions as indicated by a large heart, capacious lungs and a well developed abdomen, any animal must be handicapped in the capacity to produce large amounts of milk. This does not mean that small or even weak animals will not sometimes produce milk in paying quantities but it is done usually at the expense of their vitality.

In regard to the third group of characters, there would undoubtedly be a greater difficulty in showing a distinct physiological relations between the conformation and production. In all probability with respect to most of them, it would have to be said that their relation to milk production was coincidental. It is not known that it is necessary for milk production that cow should be wedge shaped, have a spare form, lean withers, level rump or what not, but it is found that in the majority of cases, these characteristics are found accompanying or coincidental with large production and the majority is sufficiently large in most cases so that the conclusion is at least fairly strong that the characteristics are related to functional activity in milk production.

Any discussion in this matter would be incomplete without calling attention to the great usefulness of actual records of milk production as compared to any characteristic of the so-called dairy type. It was not until the breeders of dairy cattle discovered this fact and set themselves earnestly about the business of securing records of production that any very great progress was made in improving general dairy capacity in the

various dairy breeds. On the other hand, when selection for breeding purposes is based wholly on the performance of the parentage, various faults of conformation, especially those that have to do with beauty and symmetry, are almost certain to appear.

And this brings up to the last consideration; namely symmetry or beauty in the dairy animal. The standards of symmetry or beauty are well known to be subject to sudden and unreasonable change just as are the fads or fashions with respect to any thing with which human beings have to do. A regular, symmetrical udder, straight on the back and level on the floor, may not contain any more secreting follicles and may have no greater capacity than one of equal size that is long, narrow, funnel-shaped and pendulous, but it is comparatively easy to see that the former is more pleasing to the eye, particularly the educated eye, than the latter and is therefore more to be desired in an animal. An animal with a straight back may have no greater capacity to secrete milk and may be no stronger than an animal with a crooked back but again she is more pleasing to the eye; and so the application might be extended to all parts of the body. So long as the vital functions are not sacrificed and the capacity to secrete is measured by records of production it is the province of the breeder to practice such selection that his animals will approach the highest ideal dairy type as recognized by the individual or concurrent opinion of those who have given the subject the largest amount of most careful study.

Preparation for the Dairy Business

J. H. BAIRD

Manager Keewaydin Farms, Gates Mills, Ohio

THE man of today is judged by the standards he is able to set and uphold. In order to set a standard he must know what is expected or what others have done. To reach a high standard in any phase of agriculture he has to find out the underlying cause that has brought about former results. In a college course in agriculture a man is able to get more today than did the student ten years ago. New ideas are brought to his notice because the

though he should perhaps have to make his own way through college. To make a start the student might go to the college dairy farm to see what he could do to earn money. Husking corn, filling silos, and cleaning windows are some of the things that may test his faithfulness. Soon he must select steady work that he feels will give him the experience for his future career.

He must remember that dairying is a wide field. Careful study of barn con-



DAIRY CATTLE, FINE BUILDINGS, AND GOOD FARMING—A TRIO HARD TO BEAT.

graduates of previous years have kept on with the study of causes. If we were to compare chances for success of the college man with one lacking college training, this opportunity of studying underlying causes is reason enough to warrant his taking the advanced school work.

The important factor in a man's college course is to have a definite aim toward which he is working. In this number of the Agricultural Student the subject of Dairying is uppermost in importance, so let us consider whether college training can better prepare a man to develop an ideal herd, even

struction may cheapen construction cost. In summer the student may gain practical experience by working on dairy farms. He can keep on the lookout for the best in dairy methods and machinery. Methods used in one section have sometimes never been tried in others. What would be beneficial in one section might not be beneficial in another. The water supply is an important factor in producing good milk, hence water systems should be observed as well as feeding and housing problems.

We often hear it said, "It is better to have the practical rather than the

theoretical knowledge," but why not have both? A college man is often better trained in both lines when he has but little money on which to start his education. After making his way through college he can scarcely expect to buy a farm equipped with stock and machinery. He must decide, and is fully capable of deciding such questions as what breeds he wants to work with, whether he desires pure-breds or grades, or whether he will manage a large herd where the owner wants all the milk he can get at the least expense.

If he chooses pure-breds he must study each animal in order to develop a herd, test each cow to get a yearly record, go out with his best individuals to shows, go to sales to learn from others as well as to give advice. If one is aiming at immediate financial returns at the sacrifice of increasing the value and productiveness of the herd, he should handle grade cows instead of pure-breds. The latter have been carefully selected and mated for too many

generations in order to develop certain qualities, and have thus involved too great an expense, to let them degenerate.

The world's records are hard to surpass, but the average yield can be greatly increased. Through proper feeding and care the daughter may exceed the mother in production and this may be repeated in the next generation. The yearly record is the only sure test of a cow's ability in production.

The pure-bred cow has been trained and developed physically for hundreds of years. Selection is the only short road for improving her. The college man may improve his herd in a shorter time as he understands these laws of evolution. The untrained man with a lack of reasoning ability may make mistakes that mean the loss of great sums, either for the owner or himself; but with a foundation on which to build, the climb to success is more sure and the high standards more easy to reach.

For the fruit of the time of our toil,
For whate'er we have fought for;
Whether born of the brain or the soil,
Be the meed we have sought for;
For the gifts we have had from His hand
Who is Lord of the living,
Let then ring through the length of the land
A Thanksgiving! Thanksgiving!
—Clinton Scollard.

The Value of Advanced Registry and Register of Merit Records

PROF. OSCAR ERF

Head of the Dairy Department at Ohio State University

THE term "Register of Merit" has reference to a system of butter fat records based upon a standard fixed by the American Jersey Cattle Club. The term "Advanced Registry" applies to the same scheme in the Holstein-Friesian, Guernsey and Ayrshire breeds. The Brown Swiss Association terms it "Registry of Production" and the Red Polled Cattle Club have a "Test of Production" in which cows making a certain amount are given a Certificate of Merit.

There is no question but what it is the most advanced step in determining the real value of individuals, families and breeds, in the field of pure bred work. Breeds were established upon the law that "Like produces like" and according to this law, the characteristics of the parent are transmitted to the offspring, with a greater or less degree of certainty. The purer the breeding of the parent, the greater the certainty of such transmission and in order to facilitate this and make it more universal, herd books were established, identifying the animal and recording the names of its ancestors. This simply furnished a guarantee of purity of breeding and was of small value without a record of performance in connection with it. That a cow has in her pedigree a number of high sounding names of animals that have, perhaps, been highly advertised by some man and are without any particular individual merit, counts for nothing. If, however, there is a long line of ancestors, all of which have been high and economical producers, the pedigree becomes of inestimable value. If there is

any possible chance for an animal to meet the requirements, the owner is making a great mistake when he fails to have her officially tested.

We sometimes hear this spoken of as "the rich man's hobby," a race between rich men's cows, having pounds of butter fat for the goal. But we are glad to say that from 60 to 70 per cent of the men whose cows have made high records, own small farms, from ten to two hundred acres and this speaks well for the advantage of the official test for the average dairyman. But the real value of the official testing is in the weeding out of poor cows and the selection of the best and most economical butter fat producers. And if there is any merit in the old law of like producing like, upon which our breed herd books have been founded, it certainly must apply in the case of animals with high producing capabilities.

As this work grows older, the possibility of its use for selecting sires of merit, becomes greater. There is no question but what a bull calf whose dams on both sides for four generations back have records of 400 pounds of butter fat per year, is of much greater value and is more likely to transmit that characteristic than one that has been bred haphazardly and with pedigrees backed with no record of performance. The time has passed when high sounding names are connected with value and it is now being determined by the actual performance of the individual. A record of performance should accompany the pedigree of each animal, to show its real merit and worth.

The Place of Dairying in Ohio Agriculture

PROF. O. C. CUNNINGHAM

Department of Dairying, Ohio State University

DAIRY products, or more properly milk products, have been used to some extent from earliest periods of history. We find them mentioned in the Bible in the early history of the Hebrew race. Not until modern times, however, have we had a system of farming the chief object of which is to produce dairy products.

If we go back seventy-five years or more in the history of our own country we find the dairy industry only beginning to develop. Previous to that time our cities were small and required only a small amount of milk, cream, butter, and cheese all of which was produced by farms adjoining the city, or by the so-called town cow. The families which did not furnish their own milk products were comparatively few. When these products were produced for sale they came from two or three cows kept by the farmer and not from what we now think of as dairies. The growth of our large cities containing a great and ever increasing number of consumers who are in no sense producers has completely changed conditions and made it profitable for farmers in some localities to specialize in the production of milk products. Because our cities are still growing rapidly the territory called upon to supply them continues to increase following the radiating railroad lines. The butter and cheese which was all made on the farm in early days is now made in factories and the raw product for the same shipped long distances.

This has made possible the development of dairying and the keeping of larger numbers of dairy cows in almost all parts of our country than was prac-

tical when the farmer had to manufacture his own product.

The great number of large cities in Ohio and in close proximity give it particularly good markets for dairy products. However, the good markets are not the only reasons for developing dairying in the state. The same thing is taking place in Ohio that has occurred in dairy countries of Europe and some parts of the United States and that is the bringing in of the dairy cow to rebuild the diminishing fertility. The decreased fertility due to continued cropping and poor methods calls for some system of farming that will restore it. Dairy farming together with proper rotation and use of fertilizers lends itself to this better than any other system because the dairy cow is the largest producer of manure of our farm animals. She also encourages the growth on the farm of soil building legumes such as clover and alfalfa and the use of purchased feed such as bran, oil meal and cottonseed meal which are rich in fertilizing elements.

It has been the history of agriculture in European countries that the dairy cow should be maintained profitably after the steer, the pig and the sheep had been driven out. The same will be true in Ohio because of the facts already given and the additional one that she produces food products more cheaply than other animals.

Dairying has come to be a permanent part of our agriculture in Ohio. Many who see the advantage of making dairying a part of their farm operations will be confronted with the question as to how far they can profitably specialize in dairying. This will depend large-

ly on farm factors, (1) inclination of the man, (2) accessibility to market, (3) whether the sale of pure bred animals is to be made a part of the profits, (4) the water supply.

The inclination of the man must always be a large factor in determining his business. Just as a man should not be a doctor unless the work of a doctor appeals to him, so he should not be a dairyman unless there is an appeal in the work of the dairyman. He should

all feeds produced upon the farm. It may as well be said in this connection, however, that the farms on which it will be most profitable to confine the source of revenue to dairy products alone will for some time at least be comparatively few. The greatest profit in most cases will come from the production of a money crop as well. The increased yield from these crops as a result of the manure produced on the farm and the raising of leguminous



WHITE LILY OF SOUTH FARM.

—Courtesy Ayrshire Breeders' Association.

be fond of cows and caring for them and should not be unwilling to give close application to his business and its details and to put in rather long hours.

It will always be true that the most specialized dairying can be done best on farms that are close to the market, that is near to a city, a condensery, a creamery or close to a railroad station that gives direct connection with the above outlets for his product. Oftentimes it is profitable on farms thus favorably located to devote practically all effort to the dairy proper, feeding

crops will be one of the profits resulting from the dairy operations.

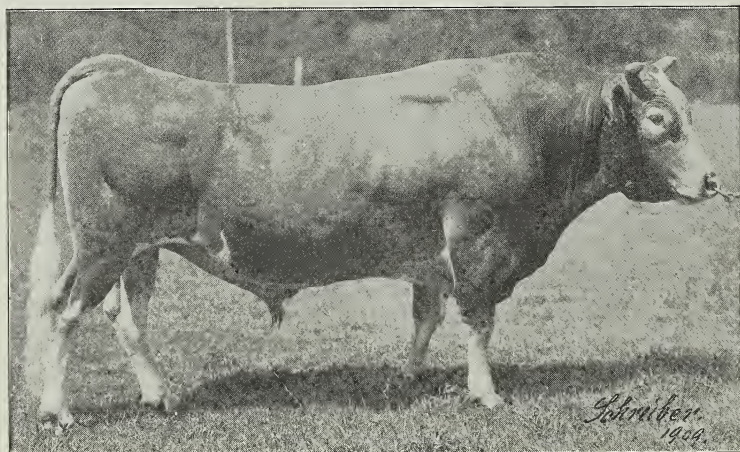
Farms in districts not having quick connection with large cities or which are on poor roads some distance from a railroad station are not so favorably located for dairy specialization. Many of the farms of southern Ohio will come in this class. This does not mean that these districts are not open to dairy development. In fact, in the opinion of the writer, the keeping of more cows offers a greater chance for increased profits and increased fertili-

ty than any other system of farming in these inaccessible regions provided they are near enough a railroad station to justify shipping cream at least twice a week. In most cases, however, the dairying will best become a part of quiet diversified farming, fewer cows per acre being kept than in the more favorable sections and the products being marketed as cream to creameries. As our country grows and cities become still larger even these rougher portions of Ohio may be called upon to be larger producers of dairy products.

If a pure bred herd is maintained and properly managed the sale of breeding stock will add largely to the income and justify a larger part of the time being given to the dairy herd than would otherwise be profitable. The profit from this end of the business also will be influenced by location. Pure bred dairy herds are always more profitable in a locality where it is gen-

erally known a certain breed is kept by a number of farmers and good cows are always for sale. Therefore, it will always pay the beginner with pure bred dairy cattle to consider his community and adopt the breed which has a start there or, if he cannot bring himself to do that, it will be to his advantage if he can get his neighbors to take up his breed.

The fourth consideration mentioned as affecting the extent to which dairying might be specialized was the water supply. In some parts of Ohio this need not be given consideration because it is plentiful but in other sections, particularly in some of the hilly parts of southern Ohio, it is a serious problem. When there is a question as to a good water supply being available it is the first thing to be considered because dairying becomes drudgery without it and can not be carried on in the sanitary way it should.



IMP. MASHER'S SEQUEL.

He Has More Daughters in the A. R. Than Any Other Bull of the Breed.

The Advisability of Line Breeding in the Dairy Herd

B. J. RUETENIK
Manager Good Hold Farm

THE old adage, "Everlasting sticking to a thing ultimately brings success" never could be applied to the dairy with greater stress than at the present age. The selection of a foundation herd together with a herd sire presents to the experienced breeder, not to mention the novice, a world of difficulties. For the former it means that his selection must be of a quality that will insure him early returns, whether his intentions be to produce milk, or to sell stock. For the latter it means that he has all the disagreeable experiences to overcome that pertain to his future success. Never before has the dairy problem assumed such great importance not only in the care of the herd and the products of the dairy, but also in the selection of breeding stock.

We admire dairymen who have ideas and principles in breeding, whether right or wrong, and who closely adhere to the same. Many say that all the dairy herd is the sire. It is true that the dairy could not prosper without one of the best sires. Not enough stress, however, is put on the dairy cow, and in many of the greatest dairies unprofitable animals are kept along in the herd for the reason that their pedigrees show fashionable breeding. It is very reasonable to expect that if we breed a cow that is deficient in size, udder and dairy capacity, to a bull similarly inclined, that the offspring will be materially weakened and will show to a greater degree the defects that have already existed in the sire and the dam. On the other hand, if we breed where size, production and type are manifest in both the sire and the dam, especially if

they be of the same family, we can reasonably expect the offspring to be that much more strengthened in the good qualities that have gone before. For instance in a large and modern dairy a daughter of a famous bull, that had a butter-fat record of over twenty pounds was bred three times in succession to a bull whose sire had a large number of famous cows in the Register of Merit. The offspring consisted of two heifers and a bull. The daughters went into the Register of Merit with large performances as two year olds, and one having been tested as a four year old, eclipsed the performance of her dam. Another cow in the same herd, as great a producer as the former, was twice bred to a bull of fashionable breeding, that made a wonderful record in the show ring and whose daughters were beautiful to look upon. Also his sire sold for a fabulous price. One of the two resulting daughters failed to make the test, while the other went into the Register of Merit by a small margin. In the latter case production and the adaptability of the two individuals mated were sacrificed for fashionable breeding, and the consequent results were a little less satisfactory.

It is the wise breeder that knows his own cows and knows what they are capable of doing at the pail. In addition to this he must be familiar with the record of their ancestors for generations that have passed, and by a consistent breeding plan, using a bull that is strong in the defects of his cows, develop animals that by their merit will forge their way to the front and be an honor to the entire dairy community.

The Dairy Exhibit at the State Fair

ROBERT L. FLEMING, '14

WE are now far away from the idea that an exhibit, in order to draw crowds and be successful, must be of a sensational nature. We are now viewing these things in a different light and an exhibit in order to be truly a success must be educational. This was clearly proven at the State Fair by the Dairy exhibit.

The entire space of the new dairy building was given over to the Dairy Department of the Ohio State University. And here the work done was an attempt to show the people how milk is handled in a sanitary method from production to consumption. That the attempt was a success was vouched by the large number of people that crowded the building from early morning until late at night.

In one wing of the building was a model dairy barn. Here were housed twelve registered Jersey cows and these cows furnished the milk for some of the other operations of the plant. In the model barn were a number of large pictures showing unsanitary conditions that exist in most of our dairy barns. This alone was well worth the cost of a trip to the fair. For in comparison to the way that the stable ought to be managed, as shown by the model barn, the farmers were reminded by the pictures of conditions as they actually exist. Many farmers opposed to

the so-called "model" barns, after seeing the comparison, resolved to go home and better the conditions on their own farms. In the stable the record of each cow was posted and in this way the people saw just what each cow was doing. This was also a very strong argument to the farmer who was opposed to keeping records, for he saw how simple and how easily it could be done.

The front wing of the building was used for the other operations of a fully equipped dairy establishment. In one booth the milk was clarified, cooled, and bottled; in another booth ice cream and butter were made; and in another booth were found the bottle-washing machine and also the can-washing machine. All these operations have their own special place in an educational exhibit, for the farmer was shown exactly how to do the work rather than told how it ought to be done. The testing department was also another popular place. Here the Babcock test was explained and demonstrated. Dairymen are beginning to realize that they are helpless without the Babcock tester and the scales. The endless stream of people that crowded around to see the demonstrations and to ask questions in regard to the dairy work was a good proof that the exhibit was filling its mission and also that it was a success in every respect.

Fie upon thee, November, thou dost ape
The airs of thy young sisters; thou hast stolen
The witching smile of May to grace thy lip,
And April's rare capricious loveliness
Thou'rt trying to put on. —Julia C. R. Dorr.

An Afternoon with a Successful Dairyman

J. W. HENCEROTH, '14

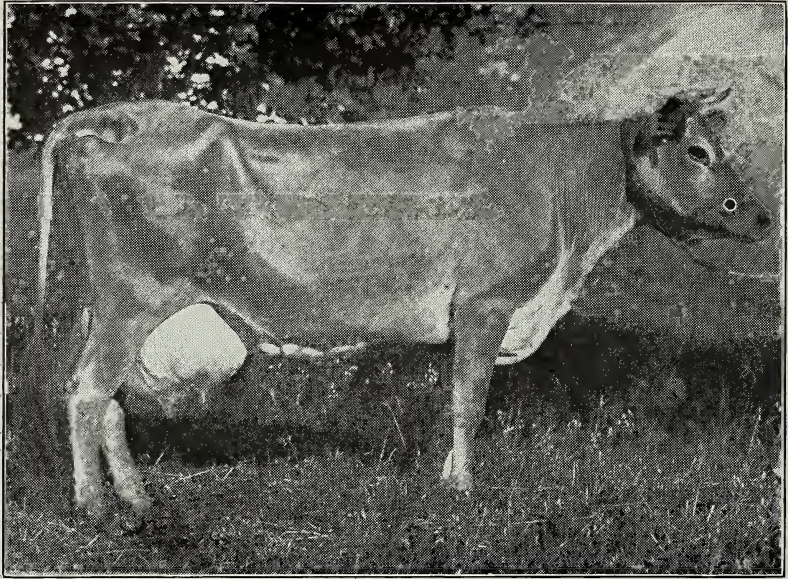
ONE day in late summer it was my privilege to spend an afternoon at the home of L. P. Bailey, the genial and successful dairyman of eastern Ohio. His farm is situated in the hill section of Belmont County. The land is rather rolling with steeper slopes for pasture and with plenty of ground that is in fine condition and well situated for the growing of immense crops of clover, alfalfa, corn and ensilage for the herd of fine Jersey cows.

Arriving at about the noon hour, the first thing was to enjoy a country dinner in which real Jersey milk and cream and home grown watermelon played an important part. After dinner the genial host and the writer went through the carefully planned dairy barn. This barn, where the excellent Jerseys are fed and milked, is one noted for its conveniences and sanitation. At the time that it was built several men advised against such impractical devices as the owner intended to put into the new barn. However, he believed they were correct and went ahead and put them in, and his critics are now saying they are the real thing. At this point it would be well to relate an instance that happened at the National Dairy Show. Not long after the barn had been built a certain noted judge of dairy products addressed another man saying, "Why did Mr. Bailey put in such a system in his dairy barn? He cannot produce good butter under such conditions." However, the facts were that this same judge had just passed on Mr. Bailey's butter and awarded it the highest premium of the show.

After leaving the dairy barn we in-

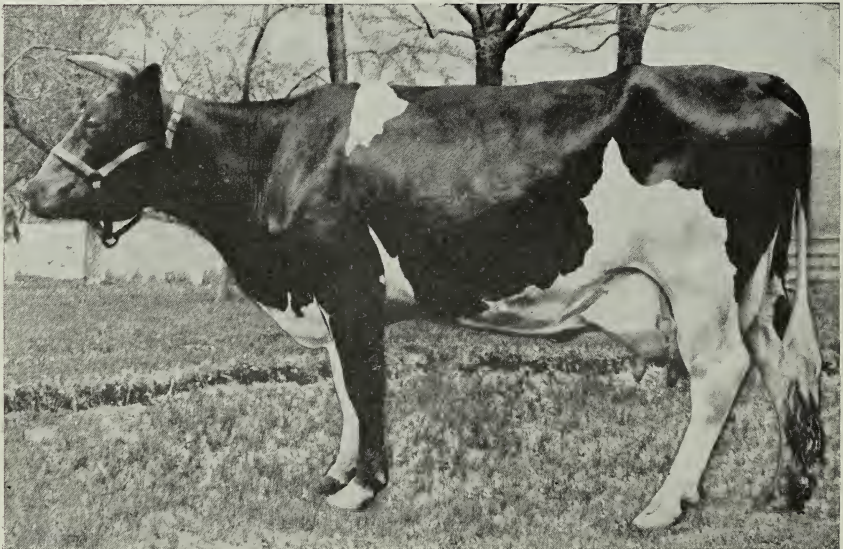
spected the other farm buildings. Then we examined a new and successful home made hog feeder where a fine bunch of hogs were fattening on clover, tankage and mill feed. Next we went to the field where the Jerseys were grazing their fill. Here our host singled out each individual and told of her merits. Looking across the hills Mr. Bailey pointed out the barn where he had started in the dairy business on a rented farm forty years ago. He told of some of his early struggles and hardships. However, his faith had always been placed in the pure bred animal, and right well has the faithful cow repaid him by buying his large and well equipped home and also a larger farm some miles away where most of the young stock is kept.

Going back to the house, one of the two sons who now run the farm, got out the automobile, of recent purchase, and we started out to visit the herds of the vicinity. These were herds started mainly through the help and persuasion of Mr. Bailey. After riding along the top of these hills, breathing the pure air, looking over fields of excellent blue grass and clover pasture and stopping from time to time to visit some fine Jersey herd they drove me to the train. I was tired but happy in the thought that I had been permitted to spend a half day with a man that had made the dairy cow keep him; and with a man, the secret of whose attainments was found in the efficient management of a dairy herd. Any one may well covet such good fortune for it is this sort of success that helps the neighbor and the community as well as the individual.



EMINENT'S BESS, THE CHAMPION JERSEY COW.

—Courtesy Ohio Farmer.



BANOSTINE BELLE DEKOL, CHAMPION HOLSTEIN COW.



HIGH-LAWN HARTOG DEKOL, OHIO'S FIRST 30-POUND COW.



DAISY GRACE DEKOL, WORLD'S CHAMP ON JUNIOR FOUR-YEAR-OLD.

—Courtesy Dimmick Bros.

The Evolution of the Dairy Industry

W. L. CLEVENGER

Dairy Department, Ohio State University

FROM time immemorial the milk of domestic animals has been used as food for man. Its value as a wholesome and rich diet has been recognized from earliest records down to the present date. The cow has been the chief milk producer although the sheep, goat, ass, horse, buffalo and deer may also be mentioned as they are raised in some countries even to-day for milk production.

Milk with its products is one of the most important sources of food for all highly civilized nations. A large proportion of the best agricultural land of the world is utilized for its production. History shows us the general use of milk and its by-products as food, has come about only with the development of highly civilized nations. Martiny points out that natives of America, Africa and Australia which have never developed past the barbarian stage, did not use milk as a food; while the principal races of Western Asia and Europe made use of it and are the ancestors of our highly civilized nations today. Thus we find the most prosperous countries are those in which the dairy cow is the foundation of their agriculture. To illustrate, compare Russia with Denmark, and Spain with Holland.

Dairying as we know it is comparatively young. Great changes in the methods and processes have taken place. Sixty years ago, as an art it was imperfect and empirical and as a science had little or no existence. These changes are due largely to the fact that more intensive agriculture had to be carried on both in Europe and America. For this reason more attention was di-

rected toward dairying. A large number of people came to America from 1820-1850 because Europe could not feed them. Since then dairying has been increasing until Denmark, Holland, Switzerland, Canada and the United States are the leading dairy countries of the world, with land worth in some parts as much as a thousand dollars an acre. The dairy schools in the agricultural colleges have been a large factor in improving the methods of making better milk and by-products, because they have spread greater knowledge of the relation of milk to the public health, and have emphasized the importance of pure dairy products from the economic standpoint.

The precise date when butter and cheese were first made is lost in the obscurity of the distant past. It seems that butter was used as an ointment before it was used as a food. In 1826 cheese was exported to England. The first cheese factory was built 1844 at Goshen, Connecticut, by Lewis M. Norton. The milk was coagulated at the farm and the curd taken to the factory to be converted into cheese.

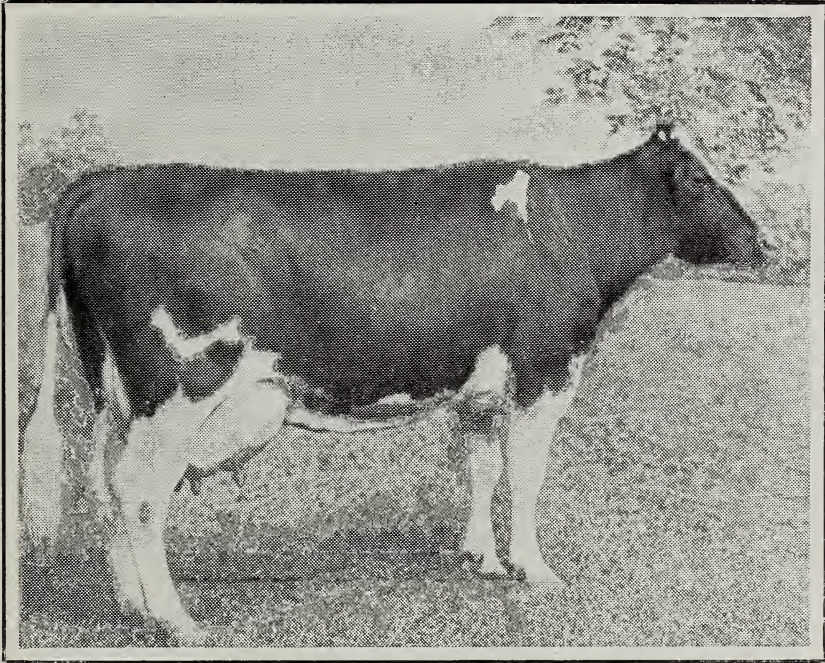
The first system of associated dairying originated with Jesse Williams of Rome, N. Y., 1851. He developed a good market for his product, and then began buying his neighbors' milk. This was the real beginning of factory conditions.

From 1862-63 creameries were started in America and Denmark. At about this time Danish butter was deemed good for wagon grease on the Hamburg market while today its butter has the reputation of being the best in the world.

In the early days of condensing, milk was boiled down to one-half and bottled. A Frenchman, Leignac, condensed it to one-sixth. Dr. Moore, a physician, later started a successful condensery. His manager, Mr. House, continued the manufacturing with an improved system. From him, Mr. Bordon, of N. Y., obtained some knowledge of the system which enabled him to

them were not commercially successful until 1899-1900. At present there are a few factories producing powdered milk.

The inventor of the ice machine was a southern physician and scientist, Dr. John Gorrie, of Apalachicola, Florida. He published his first article on cooling in 1844 and took out a patent on a machine for making ice in 1850. In dairy-



K. P. PONTIAC LASS, THE 44 LB. AND \$10,000 COW.

—Courtesy American Agriculturist.

adapt and start condensing in a closed vacuum pan. He built his first factory in 1856 and the business has been growing ever since. Upon this principle Mr. Page started a factory at Cham on Lake Zug-Switz in 1866. It now is the largest condensing milk center in the world. It is called "Anglo-Swiss."

The first patent record for producing dry milk was granted to Mr. Newton by the British Patent office in 1835. Others were recorded from time to time but the processes described in

ing, temperature control is vital, so this was a great step in advance.

Milk was creamed by revolving upon a spindle two cylindrical buckets in 1864 by Prandtl, of Munich, and in 1874 by Lefeldt in a revolving drum with a speed of 800 revolutions per minute. In 1879 two machines were perfected which permitted continuous cream and skim milk discharges. The Danish Weston was invented in Denmark and the De Laval in Sweden. Both had hollow bowls. The hand sep-

arators appeared on the market in 1886. In 1887 a butter extractor which made butter from sweet milk appeared but soon fell into disuse. The De Laval separator appeared with a series of discs inside of the bowl in 1891 which had the effect of separating the milk in thin layers thus increasing both the efficiency and capacity of the separator. The value of a cream separator needs no comment here.

Dr. Babcock gave to us in 1890 a simple and efficient way to determine quickly the per cent of butter fat in milk or cream, known as the Babcock test. Before this a certain amount of milk or cream was churned in a fruit jar to determine the richness of it by the amount of butter it would make. Then came the oil test churn which determined the amount of melted oil in direct ratio to the sample taken. These latter methods were only approximate. The Babcock test has enabled the cheese factories and creameries to buy their milk and cream on a just basis and detect losses. It has helped the dairymen and farmers to weed out their unprofitable cows and to feed and produce milk more economically. In other words, it has helped to develop the dairy industry more than any other one thing.

In 1870 a few months before the outbreak of the Franco-German war—Emperor Napoleon III commissioned M. Mege-Mouriès to make a substitute for butter for the use of the French marines and the poorer inhabitants of Paris. It was known as Margarine-Mouriès. The best ox tallow was used in making it. This process soon extended to America, Russia, Germany,

Austria and other countries. Up till 1880 nearly all margarine was made according to this Frenchman's process. This proved to be an excellent cooking fat, being more economical than butter itself. On account of the increased amount manufactured the ox tallow became less procurable. This led to the use of other oils chiefly the cheaper plant oils as cotton seed, earth-nut, walnut, cocoanut, sesame and poorer sorts of oils, in addition to the ox tallow, bacon fats, goose fats, fat from soap boiling manufactures, slaughter houses and other sources. Later the mode of preparation was changed. The fat in the process of extraction was submitted to a higher temperature and a greater pressure than in the original process with the result that an inferior article was prepared. In some of our oleomargarine made today we have butter-fats mixed with other fats to make it more palatable. It is like mixing oats and chaff together to feed to a horse because it makes a cheaper combination.

Because the dairy cow is one of our most economical producers, she should be fostered and the dairy industry encouraged. She helps to maintain the fertility of the soil and brings us uniform returns in the sale of her products. Her only limitations are too hot or too cold a climate to be kept comfortable, and the lack of a good uniform supply of water and feed. The dairy business has increased until in the United States in 1912 there were more than twenty million dairy cows whose produce sold for over a billion dollars, this being exceeded only by the corn crop and animals sold.

Some Practical Points on Feeding

ALEXANDER WATTS
Novelty, Ohio

IN order to have success with the dairy cow she must be fed all she can eat all the time. The foods given her must be such as will produce the most milk at the least cost. This means that the farmer to realize the greatest profits from his cows, must raise the most of the feeds himself and do away with some of the expensive mill feeds.

On our farm successive plantings of oats and peas are made which furnish

does not pay to produce milk with half fed cows; in fact, they must be fed to their full capacity or profits will be small. Some high priced feeds such as oilmeal, gluten, cottonseed meal, and bran are essential in addition to what the farmer is able to produce for himself. Some say it does not pay to buy them, but our experience is that it does not pay not to buy them.

It is the belief of the writer that



A MORTGAGE LIFTER.

green feed most of the summer. Green clover is also fed until harvest begins; and the second crop is also utilized in the same way. This fall soy beans and sweet corn have been fed, which is one of the very best combinations for milk production. Beets with the tops left on have also been used for about two months. Such feeds supplemented with ensilage play an important part in cutting down feed bills. In addition to these, however, grain is a necessity and must be fed every day of the year. It

American dairymen must soon adopt the methods used in the European countries. Land is becoming too valuable to lie waste or little used where it can be tilled and made to produce three times what it does now. Instead of having the pasture system we must keep our cattle in smaller quarters and feed green crops raised on the farm. Feeding will be done in the barn the year round. During the past summer the writer's cattle have run on pasture both day and night, but most of their

feed has been gotten at the barn. The test cows, however, were kept at the barn continually.

Where cattle are confined, they should have all the green feed such as oats and peas, clover, sweet corn, and soy beans, they can eat. They should also have all the grain they will eat up clean. In winter when green feed is not available, ensilage, roots and hay may be substituted. The same grain ration should not be fed more than two or three weeks at a time, as cows do better with changes. A good ration that most cows like is: two parts of a mixture of oats, bran and distiller's grains, and one part of a mixture of oilmeal, gluten, cottonseed meal and corn meal, with a pinch of salt. This gives a good milk flow and if one begins with it carefully, the cows will be allowed to eat as much as they like without dangerous results. After experience both in Scotland and United States, the writer has never made a cow grain sick. The mistake of most feeders is to begin too liberally, especially after the cow has just freshened.

Now as to how such feeding results. In 283 days Lothian Maggie DeKol produced 23,021.2 lbs. milk and 793.4 lbs.

fat. A two-year-old heifer in the herd produced in 151 days 6,956.2 lbs. of milk and 218.7 lbs. of butter fat, while Lothian Mary De Kol produced in 173 days 10,943.4 lbs. of milk and 323.1 lbs. of butter fat. One of these cows has been in milk for ten months and is still producing over 60 lbs. of milk a day. The other two have been in milk for seven months each, the older one still producing 63 and 64 lbs. and the younger one 45 lbs. of milk a day.

Records like these could not be expected from cows on pasture, for such results require intensive feeding. The feeder must watch his cows and know just what they need. The cow should be the judge of her own wants and these should be followed more closely than the balanced ration. The writer finds that better results can be obtained from a ration higher in protein than the balanced rations usually contain. Laxative and bulky foods should be used and whenever convenient the appetite may be coaxed with apples, potatoes, carrots, rutabagas, and beets. Anything the cow likes, coupled with kind treatment, will go a long way toward the highest performance.



THE SILO—THE DAIRYMAN'S BEST FRIEND.

The Pleasures of Owning a Pure-bred Herd

HAL H. HILL
Owner Hilltop Farm, Wickliffe, Ohio

SOME years ago when we first started in the dairy business, we tried to figure where the finish would be. There were many anticipated pleasures as we made the operation appear on paper. So with the finish in view, with only a forty acre farm and F. S. Peer's book on "Soiling" for a guide, we got busy.

We believed the sale of cream owing to our nearness to the Cleveland market, coupled with our desire for the pleasure in the by-products of calves and pigs, would be our plan: so for its economical and profitable production we chose imported Jerseys for our start, and have been enlarging and improving our herd as fast as was desirable. We take pleasure in stating that we have never regretted the choice of breed made. Many well known Americans, as well as Englishmen, maintain large and expensive deer parks. We believe our Jerseys are more beautiful than their deer and more domestic, and give their owner more pleasure in their production, besides being profitable.

We try to keep twenty cows in milk but our average runs about seventeen, from which we receive a monthly cream check of about three thousand dollars. Besides this our sale of calves from this imported herd, averages approximately two hundred dollars per month.

We have also had much pleasure from winning in the show ring at our county fair this fall taking Grand Sweepstakes for all dairy breeds. This was especially gratifying when we presented only seven animals and had as competitors one two-carload herd of Holsteins, another herd of twenty-five of the same breed, and also a large

delegation of unbeaten Ayreshires; over all of which we took Grand Sweepstakes, showing conclusively that there must be merit as well as pleasure in careful breeding.

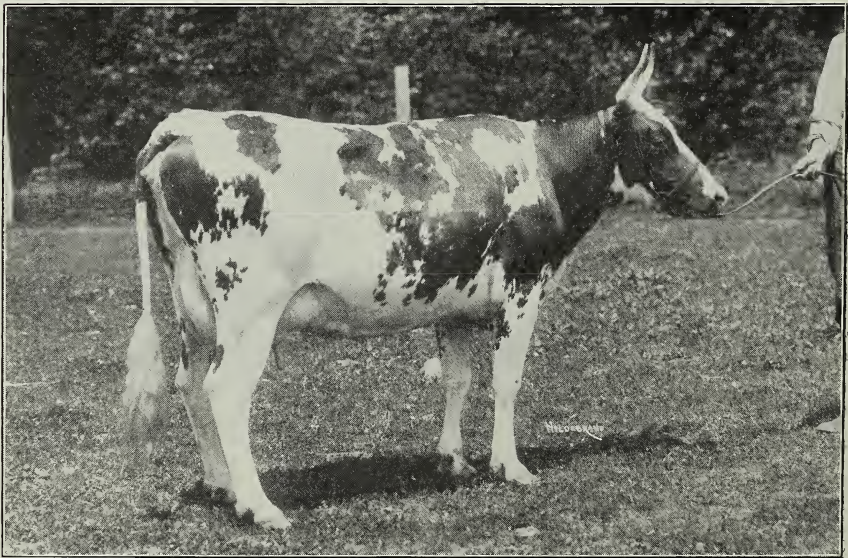
Another pleasure in owning a pure-bred herd is found in imparting to others the desire for good stock. Many of our neighbors have taken advantage of the privilege and opportunity of breeding to our best bulls and when they secure heifers out of grade and high grade cows, that are a credit to any herd, we feel that we have accomplished much in the breeding line. There are instances in this section where farmers have bred grade cows to our imported bulls and have obtained calves that are in reality superior animals to some absolutely pure-bred stock.

There is at all times the interesting and pleasing study of either the improvement of your matings or in some cases an apparent error in the same. However, it is not advisable to judge too hastily along these lines. We have in mind three full sisters at present on our farm, all born within a few days of March first. The first, a 1911 heifer, has always been excellent in conformation and is making good as a two-year old in milk. The second, or 1912 heifer, has never been in the same class as the 1911 full sister and we do not believe that she will ever be able to compare with her older sister in any way. The third, or 1913 heifer, bids fair from present indications to surpass the 1911 one. In fact, if she continues to develop as well in the future as in the past she will outclass her dam, one of the best animals in the herd. The de-

duction from the above we believe proves that the mating is correct, for although we are disappointed in the second, the third comes with stronger characteristics and better conformation than the first, which we have always considered an exceptionally good individual.

There is also another matter to be considered in pure-bred stock. You have something the other fellow wants and when you acquaint him with your results, he appreciates that you have something which would be to his advantage to have also. He soon commences to figure on the advisability of increasing his assets and at the same time improving his stock by breeding up his herd as rapidly as possible. Ultimately he disposes of his scrubs, little by little as he ascertains that many

of them are "boarders," giving no adequate return for his labor and investment. He gradually but surely secures a herd that is uniform throughout, giving evidence of careful and intelligent selection and breeding, resulting in permanent benefit to himself and the community in which they are located. As one man said to the writer after an inspection of our exhibit at the Forest City Fair, this year: "Why I never noticed a cow before; but after looking at these beautiful animals, on driving through the country the ordinary cows along the road look like counterfeits." In whatever direction you go in your home locality, you have much satisfaction and pleasure in seeing the improved cattle of your neighbors, and thinking that you have helped in making these herds possible.



ETHEL OF SOUTH FARM, THE CHAMPION THREE YEAR-OLD AYRSHIRE.

Satisfaction in Dairy Pure-breds

JOHN SHERWIN
South Farm, Willoughby, Ohio

PRIMARILY, the satisfaction to be derived from dairying, commercial business, golf, or anything else, must come through development, improvement and final success. If it is to come from dairying, then select the field showing the greatest opportunity, for certainly the greatest opportunity comes from the development of a pure-bred herd.

The real satisfaction in dairying comes from succeeding in competition with others upon a basis that is open to all. Anyone without regard to cost can acquire a beautiful herd but unless he has personally contributed to the development of the herd and has operated his herd upon a profitable and commercial basis, so that he offers fair competition to his competitors, he will not realize the greatest pleasure.

The possibilities of a pure-bred herd are practically unlimited. The development of the milk records authenticated under the supervision of the State Department and making possible the official records is one of the most beneficial features and also one of the most interesting. The show ring also offers

much attraction that is open only to the owners of pure-bred cattle.

Both of these features not only contribute to the satisfaction of the owners, but are of great value to the country and promote the standard of one of the world's largest industries.

From the breeder's standpoint the value of pure-bred cattle cannot be overestimated. The cost of raising registered or pure-bred calves to maturity is the same as that of grades or other cattle. The eligibility to registration without considering the individuality of the animal adds an appreciable value, but when an outstanding individual is produced either by milk record or the show ring, the value is increased many fold.

In my own herd within one year three of my cows have made champion records. Two I have bred and developed and one I purchased as a yearling. I have also received favorable recognition in the show ring. In the development of the herd both the anticipation and the realization of the possibilities have been sources of satisfaction in "Dairy Pure-Breds."



Some Facts Concerning Milk Distribution

ROBERT C. GOLDBACH, '15

THE past few years have seen a marked change in the methods of milk distribution. Thirty years ago the methods were most primitive. In villages several of the residents kept one or more cows and these supplied the needs of the villagers. In the morning, after the milking operation, the good housewife saved out each patron's milk in his customary pail and set it out of the way to await his arrival. In the meantime she would go on cooking the

its cooling and sanitary improvements, but was usually the vehicle that the farmer had most handy. The producer would drive in front of the house and ring the bell. The housewife would come running out and receive her portion of milk in a dish or similar receptacle. This method, crude as it was, afforded less opportunity for contamination than the previous one.

About fifteen years ago the first milk bottling establishment was put into



THE UP-TO-DATE AND SANITARY METHOD.

breakfast, and the germs from the air would settle in the milk, affording excellent opportunity for the development of bacteria. It was necessary that this milk be used immediately for it would scarcely keep till the next meal.

As the population increased, sanitary conditions would not permit that a cow be kept in the city and so the milk was purchased on the farms in the immediate vicinity and, usually without cooling, was hauled to the city in cans. The vehicle for conveyance was not the powerful motor truck of today with

operation, but not until within the past five or six years has the system been generally adopted. This system, however, has brought with it an added cost in the handling of the product. The demand for convenience, that is made by the present day consumer upon the milk-man, has also proven an important factor in the increase in the cost of distribution. These conveniences can not be furnished gratuitously by the milk-man but must be paid for indirectly by the consumer. The average consumer does not realize that it costs him more to have his milk delivered

to the back porch and placed in the refrigerator, than if he should come to the curb to receive it. The average milk-man gets a salary of 60c per hour. He can demand this price because he must arise at one or two o'clock in the morning and must attend to his duty in all kinds of weather. Nearly all customers require that the milk be left on the back porch. Considering this fact, the cost of delivering one quart of milk is 1c because it requires one minute for the milk-man to complete the task. After he has delivered one bottle, he

tion that must be considered. The milk must be transported from the farm to the city. This operation costs on the average of 2c per gallon which, with the additional cost of 1c per gallon for hauling it from the station to the bottling establishment, makes the total cost of 3c per gallon for transportation alone. Expenses also occur at the bottling plant. The bottles must be washed, sterilized and handled. These operations will cost about 1c per bottle including soap and coal. After the bottles are washed they must be filled with



THE OLD AND UNSANITARY METHOD.

must walk back to the sidewalk, for few people will permit him to cross their lawns, and walk to the back porch of the next house and so on. . If the consumer would permit his milk to be left on the front porch, and would allow the milk-man to cross his lawn, the delivery could be made in much less time and the cost would be correspondingly diminished. Few house-wives realize that every time they engage the milk-man in conversation, that they are using valuable time for which they must eventually pay.

There is still another side of the ques-

tion, milk, capped, and iced which operations will cost at the least possible figure 2c per bottle. The cost of the bottle itself varies from 3c to 4c and the average bottle makes nine trips before it becomes useless. The cost of handling the milk and bottles, and the distribution varies from 4c to 4½c per bottle depending upon the amount of milk handled. The expense of handling the pint bottles is practically the same as for the quarts and they sell for only half as much. It is, then, an evident fact that the dairyman loses money on every pint of milk sold but makes a fairly

good profit on the quart bottles for they sell for nearly twice the price of the pints.

After the dairyman pays the farmer for the milk and keeps up the repairs on his machinery; after he repairs his wagons and harness; feeds and cares for his horses; when he has accounted

for all of the bad debts and the interest on his investment, there is a very small margin left that may be called profit. It is the manner in which the people demand their milk delivered, that determines the cost rather than the actual value of the milk itself.

The National Dairy Show

J. W. HENCEROTH, '14

THE eighth Annual Dairy Show, held in the International Amphitheatre, at Chicago, from October 23 to November 1, has passed into history. What the International Live Stock Exposition is to the breeder of fat stock the National Dairy Show is to the breeder of dairy cattle. It is the mecca toward which the paths of all dairy-men lead. Just to spend a few days among the choicest individuals of the dairy breeds, just to stand at the ring side and see the ribbons tied is indeed a great privilege. To be present at such a gathering of choice beauties is indeed a prize.

However, one of the biggest things to the college men is the Dairy Judging Contest. The contest was held this year on Friday, October 24, in which 16 teams of 3 men each participated. They judged a ring of bulls and a ring of cows in each of the four principal dairy breeds—the Jerseys, Ayrshires, Guernseys and Holsteins.

The men were divided into four squads and each squad was given 15 minutes for placing a ring. After judging both rings in one breed the contestants were taken to the examination rooms where they had 15 minutes to write up their reasons on each ring. The time for placing is short, hence quick and accurate work is necessary. This year a change was made in the sys-

tem of grading the contestants. Heretofore the contest has been in charge of a committee that passed on the cattle and graded the papers. This year the coaches of the contesting teams were given the same time as the students to place the rings. Then later the coaches acted as a grading committee. The papers were read to them and they graded each paper. This method was not altogether satisfactory. Nevertheless if a few changes are made it will prove better than the old method.

Missouri won the contest this year with a score of 3766 out of a possible 4800 points. Kentucky was second, with 3672 points, and Iowa third with a score of 3604.

Ohio State secured seventh place, scoring 3527. This is lower than the team from the state having so many of the champion dairy cows should stand. However, if one considers the number of teams entered and how close the teams stood the showing is very good. The teams were so close that only a few points made considerable difference in their respective positions. As the men at Ohio State are unable to take long training trips, visit the big shows or enter preliminary contests as do the men from most of the other colleges, they are really lucky to stand so high. The good to be derived from the contest were the picked men of all the col-

leges meet is something to strive for and more men should come out for the team. We hope that by another year more men will come out and place Ohio State at the top. The prizes offered are well worth winning. There are four scholarships of \$400 each, three breed cups given as prizes and usually there are some other prizes. Missouri won two scholarships and three cups this year and had the first, second and fourth high men of the contest. So it can be easily seen that it is quite an honor to win first place. This brief report would not be complete without a word about our coach. No man ever worked more faithfully or gave of his

time more willingly than did Mr. Gusler. The fact that he placed the team so high this year and the information that he secured about the new system will enable him to place a winning team in the field another year if the men will only come out and work for the team. As more teams are constantly entering the contest, competition is becoming keener each year. The team that could win a few years ago would be very mediocre now. Let the men rally to our new coach and turn out a team that will bring to Ohio State some of the cups and scholarships that other schools and other states far below Ohio in the dairy world are enjoying.



LILLY OF WILLOWMORE.



OF

OHIO STATE UNIVERSITY

A MEDIUM FOR EXCHANGE OF IDEAS BETWEEN COLLEGE AND FARM

Published by the Students in the College of Agriculture.

Established 1894.

Subscription Price, One Dollar the Year.

Entered at the Postoffice at Columbus, Ohio, as Second-Class Matter.

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COLUMBUS, OHIO, NOVEMBER, 1913.

Editorial

It is a trait of human nature to pass along life's pathway accepting its many blessings, in-
IN cognizant of the
APPRECIATION. debt we owe to the sources from which they spring. Few people recognize the debt of humanity to the dairy cow. We come to the table three times a day to find butter to spread upon our bread; cream to use upon our cereals and in our coffee; milk to drink and perhaps cheese to eat. Few stop to thank "Old Muley" for these contributions to our bill of fare, and yet if they were not supplied how sadly they would be missed. Passively she accepts one of the hardest and most energy requiring tasks; that of refining the rough products of the field into the most perfectly wholesome and nutritious food on earth. Grass, hay, ensilage, and meal are of little use for man's consumption, and if they were their digestion would

require much of the energy which is now devoted to higher pursuits. Let us then regard "Old Muley" as a kind mother to humanity, and treat her with the respect and kindness that her debt demands.
 J. F. W.

The greatest event in the life of the Greek athlete was the placing of the Laurel Wreath on his brow. The
LETTERS FOR THE man who out-
JUDGING TEAMS. stripped his fel-
 lows in the strife felt amply rewarded when he received the coveted prize. But in this day of commercialized sport, society has drifted far from the Grecian idea of a suitable reward for the victor.

Here at Ohio State suitable letters are granted to the members of the Varsity, College and Debating Teams. However, there is a group of men who have been overlooked in the past—

those men are the members of the judging teams. No men in school work harder to win in their respective contests than do the members of the Dairy and Fat Stock Teams.

The members of these teams bear all their own expenses, while the Debating and Varsity teams have all their expenses paid. At some of the Colleges the expenses of the judging teams are paid, others are given suitable medals and some get college credit. At Ohio State nothing is given the members of the team. They must bear their own expenses, both on the preliminary trips and on the trip to Chicago. This always amounts to a large sum. How many men would come out for baseball or football if they had to spend from \$50 to \$200 a season traveling about in preparation for, and taking part in the game? Not as many as do at the present time, we venture. This is what the judging team men must do.

In view of the above facts it seems only reasonable that the proper authorities recognize the members of the judging teams by at least granting them a "Letter." Let the judging teams be given the same recognition as the other teams that represent the University. Let us be fair and square and see that our men who contend with the picked men of other Colleges and Universities be given suitable recognition.

For many moons the compound ration has been discussed and flaunted before the young and old, the amateur and the seasoned dairyman. Our investigators, writers and teachers have led many people to believe that there was something mythical, something magical about a

balanced ration. True, there are many good things about a correctly compounded ration and no sensible or up-to-date dairyman would try to get along without some kind of a dairy ration. Neither would he be satisfied until he knew all about the feeds and his cows that there is to be known.

Many of the feeders and dairymen believe that some of the most successful feeders of high producing cows have a mysterious ration or a special feed or a combination of feeds that they use. Many dollars have been offered in bribes by men who have tried to get the formulas for the feeds fed to certain noted test cows. This is all foolishness. Even if these rations were secured, the men might not be able to feed their cows successfully. Even if they were given the rations, the feeds, and the same cow, they would fail as a feeder. Why? The success in the making of high records lies in the feeder—the herdsman—the man back of the cow. It is true that some of these men have special rations and feeds but they suit the particular cow in question. In that case the herdsman is on the job. He is there all the time. Nothing, no matter how trivial, escapes his notice. It is he that is the real deciding factor as to whether the cow shall be a mediocre individual, a Banostine Belle DeKol or a Spotswood Daisy Pearl.

Some of the best feeders in Ohio (and we have the best feeders of test cows in the world here), have personally stated that they feed by no rule. They breed and select the best cow possible. They study that particular individual. They feed her what she likes, all she needs of the proper feeds, milk her exactly right, keep it up every day in the year, and—then add another cow to Ohio's string of champions.

The agriculturist has Ceres for his goddess, while Pomona presides over the fortunes of

THE DAIRYMAN'S SABBATH.

the horticulturist, but there seems to be no god or goddess for the dairyman. Unless his milk and dairy products are absolutely pure, delivered at a certain hour for three hundred and sixty-five days in the year, through rain and snow, heat and cold, year in and year out, he is quickly condemned to a place where no self respecting god or goddess would go. The life of a dairyman is indeed a hard one. He must milk and feed his cows every day in the week. On Sunday as on every other day he must deliver his milk and cream at the consumer's door. There is, perforce, a certain amount of work that must be done even on the Sabbath day.

However we believe, after careful observation and experience of seven day weeks and no Sunday off, the dairyman could and should arrange for less work on the Sabbath day. Man is so constituted physically that he needs one day in seven as a day of rest from his customary toil. The man who works every day in the week is not working at his maximum efficiency at any time. Therefore the dairyman should plan his work in such a way that the least amount necessary is done on the Sabbath day. This is especially true on our larger and more specialized farms. There, Sunday is often no different from any other day. No man does the best work under such conditions. Our dairymen and dairy cattle breeders should realize this fact and then plan to get the maximum amount of rest—both for themselves and their men on the Sabbath day. They will profit financially and physically not to say anything about the religious and moral side of the question.

Why should the dairyman not be as careful in his observance of the "Day of Rest" as the general farmer or the orchardist? It is not only to his interest but it is also his duty to observe the Sabbath more conscientiously than many do at the present time.

"All eyes are on Ohio's cows." And Ohio invites you to view the high producing herds within her borders—Champions of Ohio and Champions of the World. In our state we have four of the World's six largest yearly record cows. Banostine Belle DeKol, Daisy Grace DeKol and High Lawn Hartog DeKol stand out preeminently as the Queens of the Holstein world. Spotswood Daisy Pearl of Anna Dean Farm leads the beautiful white and fawn Guernesys. Nor would the Ayrshire fanciers have us overlook White Lily of Sherwin's farm. All are producers and all are deserving of the appreciation of their worth to Ohio Agriculture. As the march of dairy winners passes before the eyes of the world like a triumphal procession, the "Queens of the Buckeye State" hold the gaze as leaders that are hard to equal or surpass. Right well should we be proud of Ohio's cows not only because of their individual superiority, but also because we may hope for our state to hold her present high standing as one of the foremost dairy states.

L. L. R.

"Too old to learn" is a statement nearly worn out by misuse, but yet one carrying the idea that youth is the time in every man's life for the preparation for his life work. This is true of any profession and so it is true of the dairy busi-

WHAT THE BOY WANTS.

ness. We must look to the youth on the farm to develop the industry to a higher plane. But before the boy does this, he asks you to name his possibilities and his pleasures. The drudgery caused by his father's cows has disheartened the young man and seeing a brighter life, he decides to leave the farm. He longs for a home among trees, vines, flowers, and sunshine; while on the farm now he has not the pleasures his friends enjoy. Education cannot dim the memory of such a home. Is it any wonder he hates the sight of a cow?

The young man on the farm today is confronting a problem in every line. The dairy problem includes the selection of a better type of cow for the dairy and better methods of caring for her products. Our agricultural colleges are always hearkening to the cry, but we have just started to the goal. What are you, Fellow Students, going to do to help your neighbor raise the standard? Remember, your friends are looking to you, and in the trust to yourself and your Alma Mater you should show yourself the equal to their expectations.

L. L. R.

"The best-laid schemes o' mice and men, Gang aft a-gley."

The above expresses our **OUR** sentiments in regard to our **PLANS.** hopes for "The Student."

The management solemnly resolved and carefully planned to do certain things this year. Among other good resolutions was one to get "The Student" out during the first week of each month, but now with Burns do we acknowledge that our best laid plans have been knocked awry. Conditions arose over which the management seemed to have no control, and as a result the October number was as late as usual. However we still plan and scheme to get the succeeding issues out earlier in the month hereafter. There are some other plans that are being slowly worked out. "The Student" is in a normal stage of growth and is ever on the upward trend, and the management is always desirous of adding new features and making such changes as are necessary for the development of the magazine.

Thanksgiving

The thanks we give
Are the lives we live,
No words of praise or prayer
Can change for us Omniscience
Whose laws immutable are.

The Day of Praise
Our hearts may raise
To know hereafter's glory
And find on earth
Another birth
From out "the old, old story."

—A. H. McQuilkin



SPECIALS



There is probably nothing that has advanced the interest in pure-bred stock as much as official testing, and the wonderful work that has been done during the past few years, by breeders of pure bred stock in Ohio, is having its effect upon an increasing class of intelligent dairymen. It is bringing the good cows to the front and is fast killing the scrub cow, thus greatly increasing the productive capacity of the breeds of the state. It has given to the public a knowledge of the value of high class dairy cows and wealthy men are investing large amounts in the dairy industry. Not only this, but it gives the ordinary breeder an opportunity to know which ones of his cows are a paying proposition and renders it very easy for him to establish the value of a pure bred cow.

Only a few years ago, Ohio was not considered a dairy state and today it ranks among the first in this line and is the home of more champion cows than any other state. The Advanced Registry has been the agent causing this transformation. There is a steadily growing interest in long time records and these are doubly valuable for they not only give the cow a good record that increases her value and that of her progeny, but as a rule, increased care is given the rest of the herd and there is a greater return from the whole herd as a dairy proposition. Official testing has done more for the advancement of practical dairying than any other one thing and the gratification that comes to the owner of fine animals cannot be measured in money.

One thousand pounds of commercial butter is so large an amount that a few

years ago no one would have been willing to admit that a cow ever could produce that much in one year. But today we have in Ohio eight cows that have exceeded that amount, and thirteen that have made in excess of thirty pounds of butter in seven days. It is continually growing harder to break the record in any class or division and yet in Ohio we have the Holstein cow, Banostine Belle DeKol, "the queen of the dairy world," who produced in one year 1058.34 pounds of butter fat. Her stablemates, Highlawn Hartog DeKol and Daisy Grace DeKol, produced respectively 998.34 and 962.8 pounds of fat in one year. Daisy Grace DeKol's record made her the world's champion junior-four-year-old. Maplecrest Pontiac Korndyke, with a record of 716.42 pounds of fat, heads the list in the senior-two-year class. Banostine Belle DeKol also holds the seven day record in the "Eight Months Division" having made 21.195 pounds of fat eight months after calving. These cows are all owned by Dan Dimmick and Brother, East Claridon.

Crown Princess Maxie DeKol 2nd, owned by G. W. Rising, Fayette, has recently broken the record for fat production in the senior-four-year class, by producing in thirty days 113.8 pounds of fat. In seven days she made 29.383 pounds, which is only .13 of a pound less than the amount produced by the record cow for that class. Lothian Maggie DeKol, owned by Alexander Watt, Novelty, produced in six month time, 16,620 pounds of milk, which is more than any cow has produced in that length of time. She has not yet completed her yearly record.

Anna Dean Farm, Barberton, is the home of the greatest herd of Guernseys in the world, and one of this herd is Spotwood Daisy Pearl, whose ability to produce 957.38 pounds of fat in one year made her the champion Guernsey cow of the world. Ethel of South Farm, with a record of 589.20 pounds of fat, is the champion Ayrshire three-year-old; and White Lily of South Farm with a record of 503.88 pounds of fat, is the champion Ayrshire two-year-old. These two Ayrshires are owned by John Sherwin of Willoughby.

It is to be regretted that we have no record breaking Jerseys to report, but Ohio has within her borders as good herds of Jerseys as can be found, and it only remains for the official test to discover a world's champion.

Nora E. Peck.

THIRD ANNUAL APPLE SHOW.

On December 4 and 5 the Horticultural Society will hold in Townsend Hall the best apple show in the history of the University, according to the plans of the committee in charge. This, the Third Annual Apple Show at the University, is attracting wide interest among both students and growers in the production of the highest class of fruit. Apple shows bear the same relation to the apple industry that education bears to our modern civilization. It helps to define our ideals of production and to set a high standard of perfection which enables us to attain a degree of excellence previously unknown. Such a show affords an opportunity for students to become familiar with the best varieties and to compare the types

of the different fruit belts. It is no less important to the grower, since it gives him a chance to see the methods of the other growers and to profit by their results.

A new feature this year will be given for the benefit of the consumer. The Department of Home Economics will give a demonstration of "How to prepare the apple in 197 different ways." In addition coffee and sandwiches will be served free to guests and a cider and apple booth will be prepared by the co-eds of the Horticultural Department. The Experiment Station promises to send an exhibit of varieties and pathological specimens that will eclipse all former displays. This will be a particularly interesting and instructive display to the consumer, as the varieties will be labeled as to their use, season and quality. Lectures by experienced and practical men will be given on topics of especial interest. The Students' Judging Contest will be held December 4th at 4 P. M. As the winner has his name engraved on a silver cup, the event always arouses enthusiasm and considerable friendly rivalry among the students. The Forestry Society will exhibit a number of unique and interesting specimens from the woodlot that are well worth the attention of any one. The most up-to-date methods of tree-surgery work, which has become so important in saving valuable shade and ornamental trees, will be demonstrated by Kessler, Deitz & Co. It is expected that every student in the University will make an exhibit. The premium list is very attractive, having been more than doubled over that of last year.

H. C. Kelley.

WITH THE BREEDER

NOTES OF INTEREST AMONG THE FLOCKS AND HERDS

Ohio has become famous in recent years in bringing to the front rank in production and individuality some of the best types of the dairy breeds. Her cows have attained prominence through their remarkable yields. Her bulls have proven themselves sires of individuality and sires of producers. Among these the following deserve special note:

Lucy's Champion, now owned by the Hartman Stock Farm, is a prize winner among the Jerseys. He was First Prize, Champion, and Grand Champion bull at New York and Mass. fairs in 1908, of New England fair in 1909, and of the Ohio State fair in 1910. He also won the blue ribbon for get of sire at Illinois State fair in 1909 and Ohio State fair in 1911 and 1912. Champion's Handsome Lucy—First Prize, Champion, and Grand Champion at Ohio State fair in 1912—is one of his get.

Eminent's Raleigh heads the Good Hold Farm at Mentor, Ohio. While yet on the Island of Jersey he made a reputation for himself and after being imported to America, he was placed at the head of a herd of excellent breeding. Through such great opportunities he has sired a large number of exceptional cows from a viewpoint of type and production. He now has 47 tested daughters most of which range in production from 400 to 600 pounds of butter fat.

A bull in many respect outranking

all other sires is found at Maplecrest Farms owned by Dan Dimmick & Bro., of East Claridon. This is Friend Hengerveld Dekol Butter Boy, the sire of the three Holstein cows whose combined yearly records exceed those of any other three cows the world has ever produced. These are Banostine Belle DeKol, Daisy Grace DeKol, and High-Lawn Hartog DeKol. This bull is the only sire of any breed that has 20 or more A. R. daughters all testing over 20 pounds.

Pietertje Hengerveld Sir Korndyke is the herd bull of Alexander Watts, Novelty, O. This bull was champion this year for the best sire bred in the Western Reserve. An A. R. daughter, recently finished a test of 120 days, producing 5660.6 lbs. of milk as a two-year-old.

Among the Guernseys Imp. Galaxy's Sequel of Chestnut Hill Farm is a bull of rare quality and breeding. He took first prize over the Island and has won numerous awards here. He now has 80 registered offspring.

Anna Dean Farms own Langwater May King. Both this and the preceding bull trace to Masher's Sequel, considered by many the greatest sire of the breed.

Auchenbrain Brown Kate 4th 547, owned by Percival Roberts, Jr., of Narbeth, Pa., has just completed a new world's record for Ayrshires. She produced 23,022 lbs. of milk and 917.6 lbs.

of fat equivalent to 1080 lbs of butter in her yearly record. The average per cent of butter fat was 3.99 per cent.

Owing to the death of its owner, L. E. Holden, Good Hold Jersey herd at Mentor, O., will be dispersed. The date set is November 15. The herd consists of 150 head many of which are of Register of Merit breeding. The herd bull is given above.

Ohio is still pushing to the front in the breeding of record cows. Now Crown Princess Maxie DeKol II breaks the record for four year olds in fat production by producing in 30 days 113.8 lbs. fat from 2,588.4 lbs of milk. She attained second place in her class in the seven day test, her production being 29.4 lbs. fat or 36.5 lbs butter. She is owned by G. W. Rising of Fulton Co. and made this record under ordinary stable conditions.

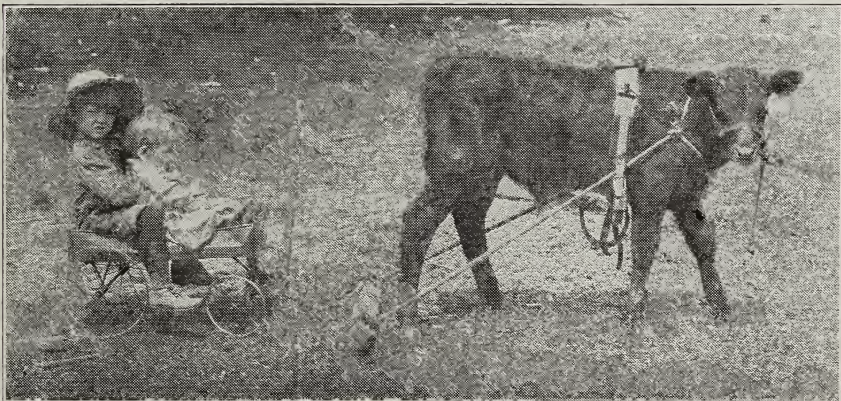
Edgewater Farms at Canandaigua, N. Y., suffered a heavy loss in the death of their championship Guernsey cow, Miranda of Mapleton. She died a few

days before their public sale, Oct. 10. This cow was expected to surpass Spotswood Daisy Pearl in production. Her daughter topped the sale at \$2500.

A new type of hog, especially among the Duroc-Jerseys, received preference with the judges at the fairs this fall. Instead of the low set, compact hog, an animal is desired having greater depth of side with medium length, and having a trimmer ham. This type affords more surface for leaf lard and brings a higher profit to the breeder.

The first large sale of Guernseys in Ohio was held at Garrettsville in October by G. W. Love & Son and P. W. Nelson. Although many buyers from other sections were present, only one of the fifty head left the state. D. R. Hanna paid the highest price when he bought Butter Cup of Woodside for \$750.

L. P. Bailey, of Tacoma, Ohio, held his annual sale in early October. Sixty-five head of pure-bred Jerseys averaged \$119. A number of grades were also sold at the sale.



"PLEASURES OF YOUTH."

CURRENT AGRICULTURAL LITERATURE

COMMENTS AND CRITICISMS ON CONTEMPORARY CONTRIBUTIONS

A book of a new type has just been received. It is "**Farm Arithmetic**," by **C. W. Burkett** and **K. D. Swartzel**. It is not a text in arithmetical principles, but is intended to be taken up after these principles have been mastered. All its problems pertain to the farm, yet they contain much information that is not known by the average farmer. The aim of the book is to arouse in the mind of the pupil and the general reader, an interest in this line of work, and to develop an appreciation and insight into the quantitative side of farm life. 280 pages, illustrated. Cloth, net, \$1.00. Orange Judd Co., New York.

An excellent book on elementary **Animal Husbandry**, has recently appeared. It is entitled "**Animal Husbandry for Schools**," by **M. W. Harper**. The aim of the book is to present the subject to pupils who cannot pursue the study at much length. Many who desire general reading in this line will also find it desirable. It condenses all the different types and breeds of farm animals and poultry. In connection with each kind, are given the principles of feeding and general management. 409 pages, illustrated. Price, \$1.40. The Macmillan Co.

"**A Catechism of Agriculture**," by **T. C. Atkeson**, is a new book that has just appeared. As might be inferred from the title, this book contains a great many questions and answers con-

cerning the management of soils, plants, crops, stock, and the farm in general. It is simple and ought to be a great help to teachers of Agriculture in elementary schools. 96 pages, illustrated. Cloth, net, .50. Orange Judd Co., New York.

"**The American Peach Orchard**," by **F. A. Waugh**, is a new book devoted entirely to the production of peaches. It discusses the growing of peaches in every detail. In a general way are treated soils, climate and planting. Under general management come cover crops, manures, pruning, insect enemies, diseases, and spraying. Some time is given to marketing, and other common questions that present themselves to the new peach grower. 237 pages, illustrated. Cloth, net, \$1. Orange Judd Co.

Dr. L. H. Bailey has put out another book on "**York State Rural Problems**." The book is made up of twenty-five lectures or summaries of lectures delivered at different places and on different topics. All deal with rural problems. The aim of the book seems to be to present, in an impartial way, the rural conditions and possibilities. 273 pages. J. B. Lyon Co., Albany, N. Y.

"**Constructive Rural Sociology**," by **John M. Gillette**, Professor of Sociology of North Dakota, is a new book which surveys rural conditions, notes tendencies and deficiencies, defines the special

problems, and points out ways of betterment in accordance with the best ideals of country life.

Nicely adapted to use as a text, and valuable as a permanent reference work, this volume appeals especially to students and to the leaders in rural movements. \$1.60 net, post paid \$1.75. Sturgis & Walton Company.

Mr. S. W. Funk, in *The American Agriculturist* of Oct. 4, advocates the practice of fall spraying for the San Jose scale. This practice seems to be coming into favor with many fruit growers. The advantages as he points out are that more time can be taken in the fall and that time is not so valuable at that season. Results appear to be satisfactory in every way.

The Country Gentleman for Oct. 4, has three very interesting and instructive articles. One of these is "**The Grass-Mulch Orchard**," by **J. R. Mattern**. It deals with the method of orchard practice as opposed to the clean cultivation plan. He has shown it to be the most profitable not only to orchardists in hilly regions, but also to those in level countries. Superior quality and color of fruit are the strong points of this method.

The second article deals with the feeding of the dairy cow, or "**The Dairy Cow's Ration**," by **J. M. Trueman**. In it the principles upon which balanced rations are computed, are given. For the benefit of those who are not familiar with these computations, five rations, adapted to different conditions, are given together with some of the merits of each.

A third article deals with some of the phenomena coming under the head

of plant genetics. It is written by **Prof. E. M. East**, a noted writer and authority on this line of work, and is entitled, "**The High Yielding Hybrid**." A brief account of the history of this study is given together with some of the facts that have been discovered. The important thing, however, which he gives, is the manner in which we may make use of these facts in the increase of our yields, or in the betterment of strains which we now have.

RECENT BULLETINS.

Ohio Agricultural Extension Bulletin, "**The Planting of Home Grounds**," by **Prof. V. H. Davis**. Extension Department, Ohio State University.

"**Two Types of Silos at Northern Experiment Farm**," by **Supt. C. G. Selvig**, and **A. J. McClure**. Office of Publications, University Farm, St. Paul, Minn.

Bulletin No. 40, Experiment Station of W. Va. at Morgantown, "**Potato Culture in W. Va.**," by **Prof. Dacy**.

Agriculture Extension Division, University Farm, St. Paul, Minn., Bulletin, No. 9. "**Selecting and Storing Seed Corn**."

"**A Normal Day's Work for Various Farm Operations**." Bulletin No. 3, Division of Publication, U. S. Dept. of Agriculture, Washington, D. C.

Prof. V. H. Davis, of the Horticultural Department, has written an article in *The Ohio Farmer* for Oct. 8, on "**Sweet Clover on Orchard Soils**." Prof. Davis seems to have been the first one to use this comparatively new crop for building up depleted soils in orchards. He has given some of the difficulties he experienced in getting started, also the method they have resorted to in securing seed.

ALUMNI WHAT THE BUSY GRADS ARE DOING



David A. Crowner spent the early part of his life in New York State. He entered the Ohio State University in the spring of '92 and graduated in the class of '96.

During the winter term of '95, Mr. Crowner began milking at the University dairy barn. The next year he had charge of the dairy. He says that he is very proud to remember now that during two years he was able to handle an average of twenty-seven cows so that they returned to the University total cash of above \$4000 each year, which gave a net income, in excess of feed and labor, of \$1500 per year. Mr. Crowner was a member of the first staff of *The Agricultural Student*, which was organized 1894.

After graduation he went to the Ohio Agricultural Experiment Station, where he had charge of the manufacturing end of the dairy for two years. Dean Hunt then made arrangements for him to come to the University as an instructor in butter-making, which position he held four years. During the summer seasons he took care of the business of

the Crowner Dairy Co., which afterwards became The West Jefferson Creamery Co. He is now president of this cooperative creamery which does a \$2,000,000 business a year and which employs over 100 people. At one time Mr. and Mrs. Crowner did all the work.

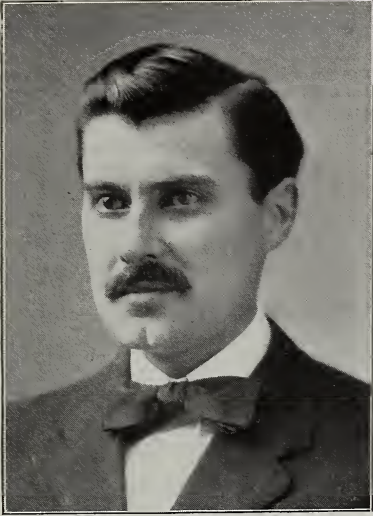
The company has given special stress to the sale of buttermilk, and has developed this side of the creamery business to a great extent. Plants are located at Zanesville and Columbus and buttermilk stores in Columbus, Cleveland, Toledo and Detroit.

Mr. Crowner says, "The University training has been of great value to me. I appreciate that I have had some advantages in selecting men for the creamery work because of my connection with the instruction at the Dairy School. A large number of our men are graduates of the Ohio State University Dairy School."

L. M. Oyler, '11, recently departed from the paths of single blessedness and "took unto himself a wife," Miss Hazel Mortashed, of Harrison, Ohio. They will reside in the Oyler residence at Okeana, Ohio, where Mr. Oyler is engaged in general farming.

Walter Dutton, '12, Assistant Professor of Horticulture at the Michigan Agricultural College, was recently married to Miss Marie England, '12, of Logan, Ohio.

Otto L. Eckman, '04, is professor of Dairying in the New Hampshire College of Agriculture at Durham, N. H.



Professor Oscar Erf.

It is particularly fitting that we should remember our friend and professor, **Oscar Erf**, in this issue. While many graduates and students of the College are well acquainted with Prof. Erf, it will be of interest to many to know more of him.

Prof. Erf was raised on a farm near Monroeville, Huron county, Ohio. He graduated from Monroeville High School in '95 and from Ohio State in '99. During '98 and '99 he was manager of the Straight Dairy Co. After graduation, he became Assistant Professor in Dairying at the University of Illinois, resigning that position to take up Field Work for the U. S. Department of Agriculture. The next year he became Professor of Dairying and Animal Husbandry in the Kansas State Agricultural College. During this time he had charge of the Dairy Department of the Louisiana Purchase Exposition and was Assistant Supervisor of Dairy Work at the Lewis and Clark Exposition. After making a thorough study of Dairying in European countries in 1907, he became professor of Dairying at Ohio State, which position he still

continues to hold. He stands high in his profession and is honored by all who know him.

W. A. Martin, '05, lives on a dairy farm near Kenton, Ohio. He completed his college career in three years, specializing in Animal Husbandry, but after going back to the farm took up dairying. He has a large, well equipped farm, breeds good stock, and can be termed a "progressive" farmer. He was the judge of the Holstein rings at the State Fair. He is also a contributor to the Ohio Farmer.

E. L. Bowser, '06, was a recent visitor on the campus. After a series of promotions he has now become assistant manager of a large milk condensery at Wellsboro, Pa. He is very much interested in his line of work and his old friends can expect to hear more of his success in the future.

Earnest Oliver, '13, is building a small creamery on the "home place," which he will operate under real farm conditions. He expects to produce 200 pounds of butter a week. This is a new venture which his friends will watch with interest.

W. C. Courtright, '13, and **Wallace Love**, '13, are employed by the Dayton City Board of Health as Dairy Inspectors. Their address is 223 N. Jefferson St., Dayton, Ohio.

Geo. A. Crabb, '07, is Adjunct Professor of Agronomy in the State College of Agriculture, University of Georgia at Athens, Ga. He was engaged in Experimental Work of North Georgia but since the opening of college this year, he was placed in charge of soil instruction in the College.

A. S. Neale, '05, formerly Dairy Extension Editor at Ohio State, now holds a similar position at the State Agricultural College at Manhattan, Kansas.

Secondary Agriculture

Devoted to the Interests of Agricultural Education in High and Common Schools

F. E. PERRY

One of the most tremendous results of Secondary Agriculture is the education of parents—as well as the children. At first the parents may be indifferent or even antagonistic; but this soon wears away and they become more interested in Agriculture than in any other subject in the school course. They pick up the text-book brought home by the children and therein discover new ideas in which they are at once interested. The ideas are practical and they try them—with success. They read about the Babcock test, of the proper care and treatment of orchards, of the use of fertilizers, of the selection of seed, of the way to fight insect enemies, etc. Many things they have been doing all their lives now open up and they see the reason “Why?” They are able to get more satisfaction from their farm work, they learn their mistakes and where they formerly lost they now gain. More joy comes to the whole home as a result of school work in Agriculture.

Are you taking advantage of the offer of the Ohio Experiment Station to distribute seedling trees to centralized schools and high schools? If not, get into the game and write to the Station for information. This is a splendid chance to do some practical forestry work and to beautify the school grounds by the addition of some fine forest trees.

The Extension Department is always ready and glad to help any teachers solve the problems which confront them. Again let us call attention to the bulletins of this Department which are available and of intense practical value to those interested in Agriculture. A bulletin of particular merit is the one by Dean Price on “Agricultural Clubs in Rural Schools,” in which valuable suggestions are offered for the organization of such clubs under the direction of the College of Agriculture. This has been in print for some time and if you are not already familiar with the bulletin write for one from the Department.

An organized community can be what it wills to be; an unorganized neighborhood is in a state of decadence.

Elementary instruction in Agriculture is now required in 18 states. In some states, as Ohio, this instruction is only compulsory in rural schools while in other states all the public schools must have secondary agriculture.

According to a bulletin just issued by the United States Bureau of Education the average salary for a male teacher in the high schools of the United States is \$700. A careful study of certain states revealed the fact that \$1200 is the usual salary of the high school teachers of agriculture.

A SUGGESTIVE OUTLINE FOR A ONE-YEAR COURSE IN HIGH SCHOOL AGRICULTURE.

By G. A. Bricker, Assistant Professor in Agricultural Education, College of Education, Ohio State University.

First Half-Year.

1. Plant Studies of matured plants, fruits, roots, and seeds. Autumn—September and October, eight weeks. Begin with the study of the products of those plants most familiar to the pupils. From the study of the fruits and products, proceed to the plants producing them. These studies should be ap-

plied science approach. Animal types and breeds should be studied, and there should be exercises in stock judging. Milk, butter, wool, meat, eggs and the animals producing these products, feed and feeding, and the proper care of farm animals are among the topics that should be considered under this head. The desirability of superior production of quality and quantity should be emphasized.

3. General Farm Management and Machine Studies.—(a) Farm Management. Winter—December-January four weeks. Agriculture should teach not



A CLASS IN CORN JUDGING.

proached from the economic point of view. Orchard fruits, trees, weeds, tobacco, cotton, corn, wheat and the more important grains and grasses, roots and tubers, and the injuries from plant diseases and insect pests are among the principal subjects for study. There should be exercises in judging. An ideal of superior plants and fruits, as well as of greater yield, should be established in the mind of the pupil.

2. Animal Studies.—Late fall and winter, November and December, six weeks. Begin with the animal products most familiar to the pupils and then proceed to the study of the animals themselves. Use the economic and ap-

only the principles of the production of economic materials, but also the methods by which these materials when produced may be conserved. General farm plans, systems of crop rotation, the plotting of orchards and gardens, the management of the dairy, plans for building, systems of drainage, the construction of fences, farm records and finances, and special farm problems are some of the topics that come under this head.

Second-Half Year.

(b) Machine Studies. Winter—January, two weeks. Begin with the simple farm tools, and then approach those machines most familiar to the pupils.

Consider construction, the relation and function of parts, etc. Make use of the motor propensities in the children. Emphasize the need of properly caring for machinery. Tear down and set up several farm machines. Study types and the reasons for the kind of work done.

4. Soil Studies. Late winter and spring—February and March, eight weeks. Simple soil studies should first be made. Such things as the types and composition of soils, humus, mulch, drainage, various relations existing among soil, water, and air, soil fertility, soil fertility tests, fertilizers, and the use and care of manures may be studied. The economic appeal to the pupil may here be made very strong, but the ideal of the conservation of soil fertility for future generations should not be missed.

5. Studies in Conditions of Plant Growth. Spring—April and May, eight weeks. Under this are combined and applied many of the principles previously learned. The central feature here is the developing plant; and the relations that soils, moisture, temperature, light, fertility, cultivation, insect pests, and plant diseases bear to it should be carefully studied. A greenhouse, a demonstration garden, and hotbeds and coldframes are quite essential for properly carrying out this phase of the subject of agriculture. Provisions should be made for work in practical agriculture throughout the ensuing summer.

At the State School Commissioner's office they are still busy with the school survey. All through the summer the press of Ohio has devoted a great deal of space to this work, speculating and theorizing upon the prospective results. No definite information is yet available. All Ohio eagerly awaits the report of the school survey.

THE SCHOOL GARDEN.

The Superintendent of Public Instruction, Frank W. Miller, is the author of a very excellent and practical bulletin, "The School Garden," which will soon be available to Ohio teachers. The laying out of school grounds, the nursery, the vegetable garden, the flower bed, pines, shrubbery, shade trees and hot beds are all taken up in a very practical way and detailed directions are given. This bulletin will be doubly valuable because of a number of fine cuts which show exactly what may be done with school gardens. Not only is this work of special interest to teachers, but will also be found very helpful to farmers, as it contains directions for beautifying the home garden and yard. Last of all but not least, is a very complete bibliography of bulletins, circulars and reference books on this subject which will be invaluable to the teacher and farmer.

Regarding the general need for school gardens, Dr. Miller says:

"After animals, plants are the objects of greatest interest to children in nature study. The average school environments make it possible to study plants to greater advantage than animals.

The facilities and conveniences for the study of plants are within reach of nearly all schools. The necessary requirements can be easily secured, in most instances without very great expense.

The increasing interest in agricultural education is making the study of plants a matter of growing importance, and the demand is becoming urgent for definite and practical plans for the establishment of school gardens.

In rural communities where there are no consolidated or centralized schools it is advisable to encourage the work

of making experiments or tests in plats on the home farm.

In the city, village or in the rural community where there is a high school or a consolidated school with sufficient space for lawns, play-grounds, and gardens, there should be a plan for growing shrubs, trees, vines and flowers, in an artistic manner. This should be done in such a way that it will serve a useful purpose in instruction. The school grounds should be an object of beauty, study and inspiration.

1. The primary object of the school is instruction.

of the school and they should be the outward manifestations of the inner spirit of the school.

6. Artistic beauty will help to win a better school spirit and a closer sympathy among teachers, pupils, parents, and taxpayers.

From the above points we should therefore easily reach the conclusion that this work should not be planned in a haphazard way by inexperienced and untrained minds. Every school board should be impressed with the fact that in selecting a school site and planning buildings and grounds, they are



A HIGH-SCHOOL GREENHOUSE AND BUILDER.

2. The work of adorning should be planned and carried out with the twofold purpose of securing beauty and utility. Trees and shrubbery attract birds and insects and facilitate the study of economic zoology.

3. The school garden may serve a number of purposes, as study, beauty, recreation, practical utility.

4. The school ground should be planned, and the work of planting and beautifying so executed, and the grounds so kept that they will serve as a model for study by the residents of the community.

5. The grounds should be the pride

dealing with that which may be far-reaching in consequences. It is to become a familiar scene; it will become a landmark; it will form lasting impressions and pictures of memory. The work of beautifying the grounds should have a plan.

There should be as much care in the selection of the landscape artist and in the execution of his plans as in the selection of an architect and competent workmen for the construction of a school building. The grounds are a part of the complete school. A school without grounds is a lame school, and it will make crippled children."

This is the month to plan for the corn exhibit in your school—it is husking time on the farm. Get some bulletins and have a real live corn judging contest this year.

ATHLETICS AT OHIO STATE.

Undefeated so far this season by an Ohio team, State's gridiron warriors have been playing great football. Ohio Wesleyan was easily defeated to the tune of 58 to 0, Oct. 4. Western Reserve proved to be a little different proposition the following Saturday, but she, too, was defeated 14 to 8. Oberlin, on her own field and aided by luck, held State to a scoreless tie, the third in the last four years. This game probably sewed up the Ohio championship for this year, unless Oberlin is defeated by some other Ohio team, which is not very probable.

A special train was run to Oberlin from Columbus, carrying 260 Ohio State men, including the band. Alumni from Cleveland and other nearby towns made the number of State rooters close to 400. Much enthusiasm was shown by the supporters of the "Scarlet and Gray" during their stay at Oberlin and especially at the game.

Captain Geissman, who was kept out of the Oberlin game on account of injuries, will probably be able to play in the remaining games. Keifer and Schaad, both "Ag." men, have been playing good football at line positions.

Assistant Coach George Little, a former football player and graduate of Ohio Wesleyan, is taking work in the Agricultural College.

Stueve, '15, and Kimball, '16, two of the assistant football managers, are students in the College of Agriculture.

The inter-class relay race, held between the halves of the Reserve game, resulted in victories for the Sophomore and Junior classes. Several "Ags" were on the different teams.

The cross-country men are rapidly getting into form for the big Western Conference meet to be held here Nov. 22. It will be remembered that we sent a team to Wisconsin to this meet last year.

On Saturday, October 25th, the "Ineligibles," a team of football men of other colleges who are now in school at Ohio State, were beaten 7-0 by the Alumni.

One of the greatest games of football ever played on Ohio Field was staged for November 1st between Ohio and Indiana. The score—Ohio 6 and Indiana 7—does not show the relative merits of the two teams. State played a hard, clean game and scored in the first quarter, the ball being carried over on a split buck. Geissman kicked goal, but it was not allowed because of a technicality. Indiana fought gamely but without avail, until the last quarter, when their left end fell on a fumble behind Ohio State's goal line.

A series of Intercollegiate football games have been scheduled by the coaches. The first game will be November 8th between the "Ags" and the "Lawyers."

The mellow year is hasting to its close;
The little birds have almost sung their last,
Their small notes twitter in the dreary blast—
That shrill-piped harbinger of early snows.

—Hartley Coleridge.



November News Notes

It is finally arranged that the Short Course is to be held on the Ohio State Fair grounds this year. The Emergency Board of the Legislature has provided additional funds which will make this arrangement possible. Thirteen thousand dollars has recently been granted the University, of which about \$7,500 will go to the Agricultural College. Probably \$3,000 of this will be used for the Short Course, while the remainder will be used for increased instruction necessitated by the large enrollment.

The Ohio Northern University at Ada, O., has arranged for a very instructive series of special lectures on important agricultural subjects. The series begins Nov. 10 and closes Nov. 22. The speakers will be furnished by the Agricultural Commission and the departments which it represents.

Dean Price is having statistics gathered concerning the alumni of the Agricultural College. Inquiry is being made as to how many have returned to the farm and whether they expect to remain there, and also as to how many have gone into salaried positions and whether they ever expect to return to the farm. Those in the latter class are requested to give the salary they first received after leaving college, and to state what increase, if any, has taken

place since that time. The approximate cost of their college training is also being inquired into, and the individuals asked whether they consider the money spent a good investment. A compilation of such facts will be most interesting and enlightening.

Professors Graham, Erf, and Cunningham were in Vinton County recently conducting evening meetings. Headquarters were made at McArthur, from whence the party journeyed to neighboring school houses for their meetings. Rural Improvement and Dairying were the subjects discussed.

The Extension Department has planned big things for the coming winter season. The first extension school will be held at Hiram, Ohio, the week of Nov. 17. Forty-three one week schools have been arranged. Progressiveness must necessarily result from such efforts. A new mailing list has been compiled by the Department and bulletins will gladly be sent to those who signify their desire to receive them.

The United States Good Roads Association will hold a convention and exposition at St. Louis, Mo., during the week of Nov. 10. Plans have been made to start a great improvement in roads and the work will be continued until results are secured. The organization is

controlled by members who already advocate ample Federal aid to build an adequate system of highways throughout the United States. There will be a Governors' day, a Mayors' day, a Legislative day, a Farmers' day, a State Officers' day and a Press and Education day. Commencing on Monday these will follow consecutively as given.

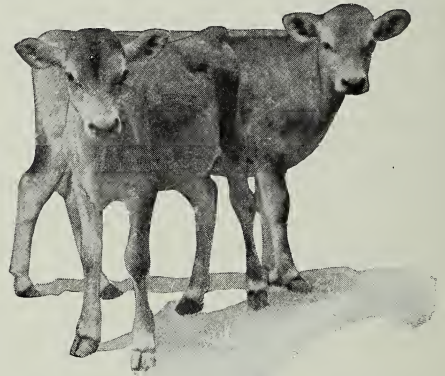
The new Archeological Museum will be ready for occupancy early in the current month. Grading and cleaning up around the building is rapidly nearing completion. The museum makes a fine addition to our "campus beautiful" and especially enhances the appearance of the Fifteenth Avenue entrance. The new Forestry and Horticulture building is progressing rapidly and it is thought that the basement floor will be complete before cold weather. Work on the Botany and Biology building is being rushed. The second story is almost complete and the whole building will soon be under cover.

Prof. C. G. Hopkins, widely known the country over as one of the foremost men on soil fertility problems, will leave the University of Illinois about the first of November. He has accepted the position of Director of Agriculture of the Southern Settlement and Development Organization, with headquarters at Baltimore. Dr. Hopkins is Professor of Agronomy and Chemistry at Illinois and has been granted a year's leave of absence to organize the agricultural work of the South.

Several investigators of the Department of Agriculture have recently been conducting investigations into shipping conditions in the United States with the purpose of preventing the present waste which adds so much to the cost

of food. It is asserted that 436,682 tons of unnecessary water are being annually shipped in corn from the producing sections to the market. There is also a big waste in potatoes. The excessive moisture in corn not only adds to the cost of shipment, hence net cost delivered, but also prevents the producer from having his corn graded as highly as it otherwise would be. There is a corresponding reduction, therefore, in the price of the product.

Dean H. C. Price recently gave an address before the Ohio Loan Association at Marietta on "Rural Credit."



DAIRY NEWS.

Few realize the work done by the University Dairy. While the business is not as great financially as that of some eastern colleges, yet the methods are the most up-to-date and the laboratory is rated as one of the best equipped of its kind among the dairy colleges. All the produce is sold in the city of Columbus. About 30,000 lbs. of butter, at an average price of 37c, and 70,000 quarts of milk, at 10c, are sold in a year's time. This, with the sales of buttermilk, cheese, and skim milk, makes a total of about \$20,000 annually. The milk is received from the University herd and two other inspected and tested herds. Cream is bought from

ten or more herds that are inspected but not tested. All their product is pasteurized before it is used in making butter or cheese.

Soft cheeses are for sale at all times. Other cheeses are made for class-room work. Ice cream and condensed milk are made in a small way.

Those in the dairy say they feel justified in this work because it provides for practical instruction in the classes in Dairying, and incidentally makes as near as possible a practical plant from the dairyman's point of view. All work in the dairy is done by students with the exception of one man. Some work their way through school by this means, besides getting much practical experience along dairy lines. About \$3,000 is expended annually for student labor.

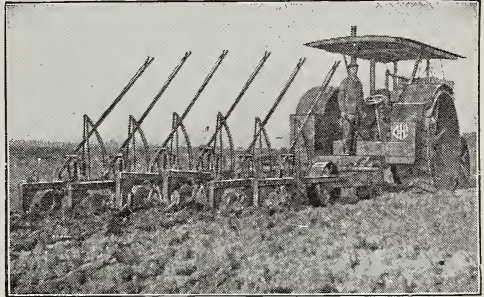
The Dairy Department was represented at the National Dairy Show in the City Milk Supply contest. Four quart samples were prepared under the direction of Prof. Cunningham and D. B. Smiley. Everything which came in contact with the milk was carefully sterilized so as to avoid all sources of bacteria. At Chicago the milk is scored according to flavor, bacterial count, sediment, solids, and container. The samples were mixed Jersey and Guernsey milk. The mixing insured a uniform sample with good solid content.

An exceptionally large amount of cheese is being made this year by students taking cheese-making. It is reported that the results are very satisfactory.

R. B. Stoltz, of the Dairy Department, spent the latter half of the week of Oct. 21 at the Pumpkin Show at Circleville. He gave special demonstration

work on milk and cream testing. R. L. Fleming also did similar work at this show. The Extension Department gave a display at the show.

Eleven persons besides the regular students, have taken the work in training for Advanced Registry testing.



AGRONOMY NOTES.

Prof. A. G. McCall and C. S. Wheeler recently had published in the Journal of the American Society of Agronomy an article on "Ear Characters Not Correlated with Yield of Corn." From the summary of the experiments conducted it was shown that neither length, weight, circumference, nor density of ear is correlated with yield.

Prof. Livingston, who is at Cornell on leave of absence, recently wrote a paper on Farm Crops which was very favorably received by Dr. L. H. Bailey. At his request it will be published in book form in "The Rural Text Book Series" of which Dr. Bailey is the originator. The exceptionally favorable recognition of this text will mean much to Prof. Livingston and is a boost for the Ohio College of Agriculture.

The National Corn Exposition will be held at the State Fair grounds at Dallas, Texas, Feb. 10-24, 1914. This is the first time that the Exposition has been held in the Southwest. It is funda-

mentally educational and presents a broad view of agricultural progress and development throughout the nation. Some opposition has arisen because Dallas is so far removed from the best corn producing land. There are many reasons, however, why the Exposition should be held there. The people of Texas are alive to the needs of improved agriculture and they have the largest crop producing state in the Union. Educational exhibits from the several State Agricultural Colleges, Experiment Stations, and Crop Improvement Associations will be a feature. Special efforts should be made by corn growers to exhibit at this Exposition. "The betterment of Agriculture" is the slogan which is creating such great enthusiasm in this undertaking.

The College of Agriculture has recently received five improved varieties of timothy seed from Cornell University, where an extensive experiment with timothy seed has been carried on for a number of years. The seed will be used on the farm in their test plots and it is hoped that it will prove valuable for Ohio conditions. Some of the varieties are particularly adapted to the production of hay and others to pasture. The college will give a great deal of attention to the work in view of improving the hay crop in this state.

The Department of Agriculture has published the following Agricultural Forecast: The combined condition of all crops on Oct. 1 was about 13.6% lower than the average for the last ten years. Farm prices for staple crops increased about 2.1% from Sept. 1 to Oct. 1. The forecast for the corn crop justifies a yield of 22.2 bu. per acre compared with 29.2 bu. for 1912. The yield of winter wheat is the largest on rec-

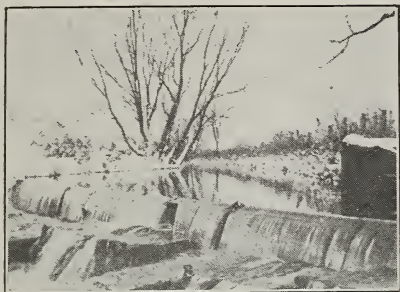
ord and the yield for all wheat is .7 bu. above the average for the five years, 1908-1912. The indicated yields of barley, rye and buckwheat are also considerably below the 1912 average and slightly below the average for the last ten years. As to other crops, cotton has the lowest estimate that it has had in the past ten years. The poor condition of all crops is largely due to the drouth which checked their development.

Two new steel corn cribs have been constructed just south of the horse barn this fall. The College of Agriculture now has six of these cribs, which are giving perfect satisfaction.

The second floor of the new machinery building, which is located just back of the horse barn, is being equipped for the Agricultural Engineering work.

General rains during the last month over the wheat districts have been sufficient to favor seeding. Crop reports show that the work has progressed rapidly. The continued drought and hot weather of August reduced the acreage below the average, but it is thought that more than usual has been sown in October. Some corn ground has been sown to wheat because of early frosts. Such land is in good tilth and can be easily prepared at slight expense. This is especially true of some western states where corn was a poor crop this year.

Ohio boys have proved that there should and can be more intensive agriculture in the state. Earl Bright, of Putnam County, won the first prize in the wheat growing contest by raising 54 bu. and 37 lbs. on an acre. Twenty-five of the boys had over 40 bu. per acre.



HORTICULTURE AND FORESTRY NOTES.

An increase of 61 students over the registration of last year brings the total to 335 attending the Horticultural College alone. At the same time there has been a large increase in the number of Sophomores and this, as Prof. Paddock says, "means that many more will complete the course." Because of the lack of laboratory facilities an unusual number of trips have been made to neighboring orchards. Each member of the class is required to hand in a written account of the trips taken.

Prof. Paddock will judge the apple show which will be held in Indianapolis, Ind., on the 5th of November. C. B. Durman, '12, is secretary of the show.

Tuesday, October 21, was set aside as National Apple Day this year. Most people are probably unaware that there is such a day, but there is, and has been for the last nine years. The International Shippers' Association is responsible for it. Its purpose is to foster the advancement of apple culture.

The Fifteenth Annual Apple Show will be held in Cleveland, January 20th to 23rd, in conjunction with the 47th annual meeting of the Ohio State Horticultural Society. The exhibit will be open to the public in the afternoons. It is thought that in the future the show

will be adopted by one of the state departments identified with horticultural work.

A German botanical journal has noted a case where vineyards have shown damage resulting from their proximity to chemical works. Emanations from these works deposited powder on the foliage. Analyses of the powder showed that oxalic acid or its salts made up nearly one-third of the powder. The wine from the grapes possessed a peculiar taste that was attributed to their absorption of the foul gases permeating the air.

On the 13th of October the Forestry Society met and the following officers were elected: Chief Forester, R. S. Deitz; Assistant Forester, G. D. Marckworth; Forest Assistant, J. E. Jones; Forest Ranger, D. G. Tear; Forest Guard, H. D. Sheets.

The Department of Forestry recently received a number of commercial wood specimens and also a number of forest maps from the U. S. Department of Agriculture.

Forestry Alumni of 1913.

G. M. Wikoff is at present working on the Pluma National Forest Reserve in California.

W. H. Larrimer is an assistant with the U. S. Bureau of Entomology at Nashville, Tenn.

Ray Brock is lumbering in Tennessee.

E. M. Selby is teaching in the High School at Pataskala, O.

Agriculture and Botany are the subjects which W. E. Davis is teaching in a High School in Indiana.

R. C. Hazler is with the Cloquet Lumber Co., Cloquet, Minn.

E. O. Blair is one of the landscape

gardeners with O. C. Simmons Co., Chicago.

"Dutch" Stover will leave in the near future for Oregon, where he intends to enter the lumber business.

J. W. Calland and Kirk DeBois are with the Forestry Department of the Ohio Experiment Station. At present they are engaged in field work in Southern Ohio.

At the present time there are 57 native pine species in the United States, of which 25 are of a western variety and 12 eastern.

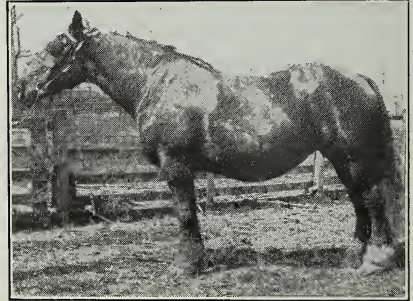
Much of the cork that is used throughout the world comes from Portugal, which harvests about 50,000 tons per year.

The forests of Norway are mostly in private or municipal ownership, the nation owning 28.5 per cent of the total forest area.

Squirrels collect much of the seed used for planting by the forest service and are causing the forest rangers a large amount of trouble.

Fifteen girls, one from each of the fifteen Southern States, are to be given a trip to Washington, D. C., as a reward for work done in connection with girls' canning clubs, which are conducted under the U. S. Dept. of Agriculture. In order to determine which girls shall be chosen a choice is first made in each county. A state contest is then held, usually in connection with a State Fair, in which the winners are selected. Many of the girls have made a profit of \$100 on a tenth acre plot. One girl produced 5,938 lbs. of tomatoes on one of these plots. The work is being done similarly in the Northern

States and satisfactory results are hoped for throughout the country. The organization is closely allied with the Boys' Corn Growing contests and a wide-spread interest is being manifested in the work.



ANIMAL HUSBANDRY.

Places on the dairy team were closely contested for this year. The men who represented the Ohio College of Agriculture at the National Dairy Show were J. W. Henceroth, G. D. Norton, and H. R. Stillman. Much work was done on some of the best herds of the state both before and after the team was chosen.

The International Live Stock Judging Team has not yet been selected. Competition is keen for places on the team. The Advanced Judging Class has taken many trips to studs, flocks, and herds in the state and has visited several fairs. Some of the places that have been or will be visited are Delaware Pumpkin Show, Lancaster Fair, Osborne and Shepard's Poland China farm at Davis, Palmer's Southdown and Shropshire farm at Pataskala, Carpenter and Ross' farm at Mansfield, and Bell Bros.' stud of Percheron and Belgian horses at Wooster. A trip will also be made to Green County, where there are some Duroc-Jersey and Poland China hogs; Cheviot, Dorset, Shropshire, and Lincoln sheep; and Shorthorn and

Aberdeen-Angus cattle. O. E. Bradfute's farm at Xenia, and Mahan Bros.' farm at Osborne will be two of the Greene County objective points.

The Animal Husbandry Department will be well represented at the International this year. The live stock which will be sent consists of cattle, hogs and sheep. Two Red Poll and two Short-horn steers will be entered. A pen of four Berkshires and a pen of six Yorkshires will comprise the hogs that will be taken. In the mutton classes three Southdown, three Cheviot, and two Dorset wethers will be entered. All the animals to be taken appear very promising and much is expected from them.

Prof. Eckmann, of New Hampshire State College, with the dairy team from that place visited Ohio State on their way to the National Dairy Show at Chicago. Prof. Eckmann was formerly employed on the Hartman Farm. He took the team out to the farm to work on some of the Hartman prize winners.

A special course in Poultry Husbandry in connection with the Short Course has been arranged to be given from Jan. 5 to Feb. 27, 1914. Many special features have been planned which will make the course a very popular one. In connection with it Prof. Hine will give a series of eight lectures on Bee Keeping. Chas. McClave, of New London, will be present for two weeks and will give special work in judging. Dr. Brumley, of the Veterinary College, will talk on Poultry Diseases. Mr. Brownell, of Washington C. H., will give several lectures on the handling

of eggs from the standpoint of the produce dealer. Miss White, of the Domestic Science Department, will lecture and give demonstrations on methods of cooking poultry, and will explain the adaptability of different kinds of poultry for cooking purposes. Mr. Rounsley, manager of the Aldrich Poultry Farm, will give several talks concerning the breeding and care of White Orpingtons. There are several other speakers who will round out a well-planned course.

The practical side of poultry house construction is being taken up by the class in Poultry Husbandry under Prof. Jacoby. Plans were given by the professor, but the students are required to figure the bill of lumber, cost of foundation, and all other details. The poultry house is to be constructed entirely by the students.

Pete Wilson, who formerly had charge of the beef cattle at the University barns, is now enrolled in the Veterinary College.

Authorities no longer expect to capture the men who recently killed the pure-bred Berkshire hog belonging to the Department of Animal Husbandry. A corn shock in the field below the hog barns was torn down to cover the head and entrails and this led to the discovery the next morning. The vandals concealed their tracks by wading the Olentangy River. It will be remembered that about this time last year a pure-bred Jersey cow and a valuable hog were killed in the same manner.

Our Collegiate Advertisers

Fellow Students, let us show our appreciation not only by giving these firms our trade, but by boosting them to our friends. A thousand students here in school ought to be a class that any firm would be glad to get their goods before. Look over this list of advertisers and do your business with them, at the same time mentioning your connection with "THE STUDENT."



Dance Correctly.

SEASON 1913-1914.

To those who neglected to learn to dance

Prof. W. J. Rader's Academies of Dancing

Will organize beginners' classes as follows:

NEIL AVE. ACADEMY,

647 Neil Ave. Phones: Auto 4431; Main 6189.

Will organize a beginners' class Friday evening, November 21st, 7:30 o'clock. First lesson.

HIGH STREET ACADEMY,

199½ S. High St. Phones: Auto 3456; Main 5877.

Will organize a beginners' class Wednesday evening, Nov. 19th, 7:30 o'clock. First lesson.

OAK STREET ACADEMY,

827 Oak St. Phone: Auto 7105.

The Academy has been arranged for functions of all sizes and is complete in every respect.

TUITION.

Gentlemen, per term of 10 lessons.....	\$4 00
Ladies, per term of 10 lessons.....	3 00
Private lessons, \$1.00 per lesson; six lessons.....	5 00

The Boston taught by private instruction.

Private lessons can be had afternoons or evenings.

Tuition can be paid \$1.00 per week until paid.

The Waltz, Two-Step, Three-Step, Columbus Minuet and Rye-Waltz taught in one term.

WINTER PAVILION—Located in Neil Ave., between Goodale St. and Poplar Ave. Open Friday and Saturday evenings. Operated on Summer Plan.

Academies and Pavilion can be secured for Private Parties, Club Dances, Fraternity Hops, etc.

NO BETTER CLOTHES THAN

MENDEL'S

—AT ANY PRICE—

Suits made and guaranteed to fit, from
\$18 to \$40.

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545 NORTH HIGH ST.

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Citz. Phone 16504

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Prices are Popular. Specials in Overcoats and Raincoats. See Our Suits at \$20.00.

Our Clothes Hospital and Laundry is also at your service.

C. H. BRADLEY, Prop.

Rah! Rah! Rah!

College Men's Shoes

Here are the New Swagger Shoes for Fall.

The Sort of Shoes College Men insist on having.

Here's one of the English Models. Note the Class and Style to this Shoe.

BATES

SHOE EXPERT

17 EAST GAY STREET

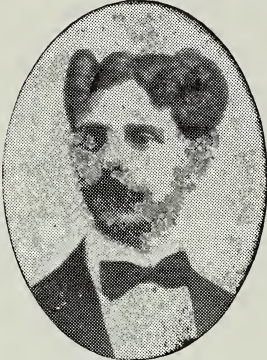


\$5.00

The Euclid Academy of Dancing

COR. HIGH ST. AND EUCLID AVE., 5 Minutes' Walk from Ohio State

Weekly reception Friday evenings



PROF. H. J. GUERR.
Business and Residence
Phones:

Aut. 8584

Bell, N. 1759

The original Maurice Tango, One-Step and Cuban Waltz taught Monday evenings or by appointment.

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Private lessons	1.00
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Private lessons can be had any hour—morning, afternoon or evening. We guarantee to teach you to dance in one term of private or class lessons.

Academy can be secured for Private Clubs, Receptions, Card Parties and Fraternity Hops.

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The Popular Eastern College styles in Soft and Stiff Hats
for Fall are now here.

KORN

Hatters to Father and Son.

285 NORTH HIGH

TWO STORES

185 SOUTH HIGH

BROSMER'S

ICE CREAM PARLOR

The Place to Take Your Friends.

We Do Catering.

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fit you with a fall suit and overcoat.

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We Frame Pictures of all kinds—RIGHT

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"THE STUDENT LAUNDRY" caters to the STUDENT trade at low prices.

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AND HIGH.

1534-N-HIGH



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The Agricultural Student

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The same model which the purchasing agents of "Big Business" buy by the HUNDRED, now sold to the public for PENNIES.

—Sold at the regular \$100 price, but ON TERMS SO EASY that each machine quickly pays for itself. The price includes all the latest improvements, the special time-saving devices and the beautiful new Printype obtainable only on this model.

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We now have in operation in the United States and Canada more than 15,000 Oliver Local Agencies. These agents have received hundreds of thousands of dollars in profits on sales of Oliver Typewriters.

There are still hundreds of places where no agencies are established.

Applicants for Oliver Local Agencies must be earnest workers. They need not have had previous experience.

We enroll them at once in The Oliver School of Practical Salesmanship and teach them selling—all as part of the free training given Oliver Agents.

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One of our general officials began his Oliver career as a Local Agent at Waco, Texas.

The OLIVER Typewriter

THE STANDARD VISIBLE WRITER

The Oliver is the best seller because it is the best typewriter. It has many exclusive features. It is the only typewriter that PRINTS PRINT. It really owns and controls Printype, now conceded to be the greatest single advance ever made in typewriter construction.

We GUARANTEE Printype to be exclusively used on Oliver Typewriters.

Oliver Agents sell Printype Olivers in thousands. The demand is voluntary and steady.

Oliver Agents are permitted to sell on our 17-Cents-a-Day Plan, which puts the Oliver in everyone's reach. Agents may even secure their own sample outfits on the 17-Cents-a-Day Plan and let their agency earnings help carry the deal.

Oliver Agents are protected in exclusive selling rights in the territory given them. They own the local typewriter business.

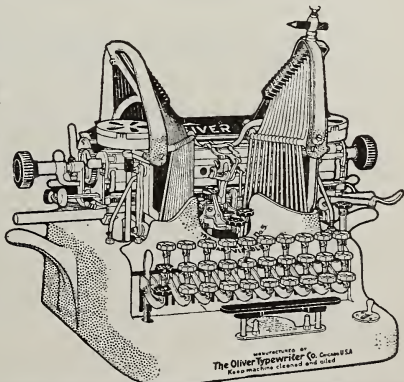
When you apply, be sure to give some details about the typewriter sales possibilities of your town, village or city.

We like and reward promptness.

Full details of Agency Proposition, a specimen of Printype, the 17-Cents-a-Day Plan and other interesting information will be sent immediately on receipt of your application. (326)

The Oliver Typewriter Agency

42 WEST BROAD STREET,
COLUMBUS, OHIO



THE OLD SAW

“Don’t put all your eggs into one basket,”

is a valuable maxim, especially to farmers. The great damage done to the Southern farmer by an occasional shortage in the cotton crop has been largely overcome by a practical application of the above adage. He has learned to plant other crops in addition to cotton. Life insurance is the

BASKET THAT HOLDS THE GOLDEN EGG

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Ohio’s Largest Financial Institution,

Organized in 1867.

Assets Over \$95,000,000.

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The Union Central leads the field in

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Lot H. Brown, Mgr., The Union Central Life Ins. Co.,
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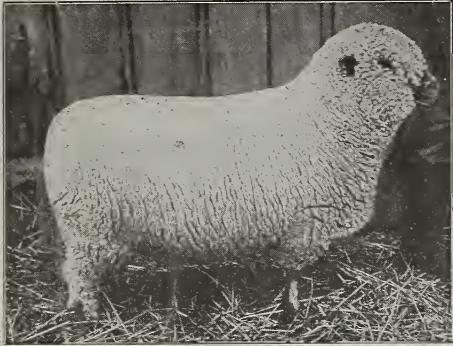
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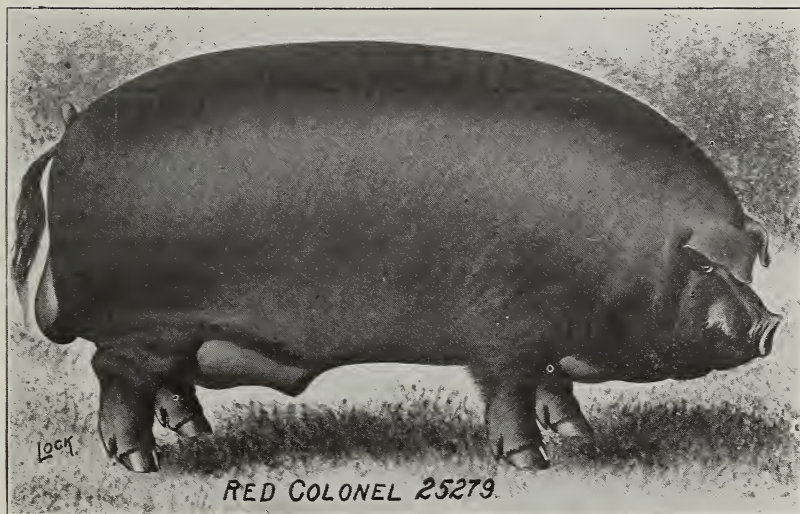
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RED COLONEL

the noted sire of foundation stock is used in my herd.



BREEDING STOCK

of foundation quality

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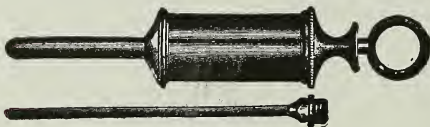


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Dehorers, \$6.50 to.....	14.00
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Write Now.

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We will guarantee 90 per cent through 200 mesh, if desired.

It all analyzes $12\frac{1}{2}$ to 13 per cent phosphorus.

We will furnish 14 per cent phosphorus, through 200 mesh screen, if you order it.

We are NOT manufacturers of Chemical Fertilizers, with a "ground rock branch, or department." Our business is **exclusively** the production of finely ground Phosphate Rock.

**OUR PHOSPHATE ROCK IS POSITIVELY THE FINEST GROUND
AND HIGHEST QUALITY ON THE MARKET.**

We Ship Promptly.

We also ship LIMESTONE for agricultural use.

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OVER TWICE ITS OWN WIDTH.**

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WALTER A. WOOD **FEARLESS MANURE SPREADER**

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The Fearless lays the manure as thick on the edges as in the center of the strip.

The Fearless shortens the time of spreading and gets the best possible results from any manure. It spreads along fence rows, up against trees, and in out of way places other spreaders cannot reach.

Now is the time for you to study this machine and see how different it is from all other spreaders in results it secures.

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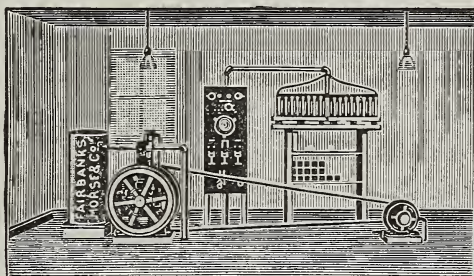
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Fairbanks Scales, Oil and Gasoline Engines, Oil Traction Engines, Pumps, Water Systems, Electric Light Plants
Electric Motors, Wind Mills, Feed Grinders, Saw Frames, Marine Engines, Spray Outfits.

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Here's What We've Done

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Let us give you further proof of the high quality of our product; quote you prices; and demonstrate our willingness and ability to handle your orders satisfactorily.

FEDERAL CHEMICAL CO.

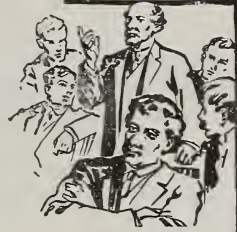
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POTASH

as Phosphoric Acid. Our note book has condensed facts essential in farmers' meetings and plenty of space to record the new things that you hear. Let us send one to you before your Institute meets.

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Acid Phosphate, Complete Fertilizers and Animal Tankage

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**Muriate and Sulphate of Potash,
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Our plant is modern and our shipping facilities unsurpassed. Write us for prices on your requirements for mixed goods or materials.

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Class '05.

Factory and Offices, Windsor Ave. and
Penna R. R.

Three-quarters of a Mile Directly East
of the Ohio State Fair Grounds.

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and keep in touch with the

**Agricultural
College**

Wing's Quality Seeds

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Our own improved strains.

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The Agricultural Student and The
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Superior Drills are used in every grain growing country on earth wherever grain is grown."

"The Superior feed sows every seed."

Superior Drills are made in every style and in all sizes, from one horse up.

It makes no difference what your seeding conditions are, you can rely on the Superior to do that work as it should be done. Superior Drills are sold under a warranty that absolutely protects the purchaser. Send for the Superior Catalogue. Read it carefully and then go to your local dealer and insist on seeing the Superior Drill.

THE AMERICAN SEEDING MACHINE CO. INCORPORATED
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IT PAYS TO SPRAY MYERS WAY

WITH A MYERS BUCKET, BARREL OR POWER OUTFIT

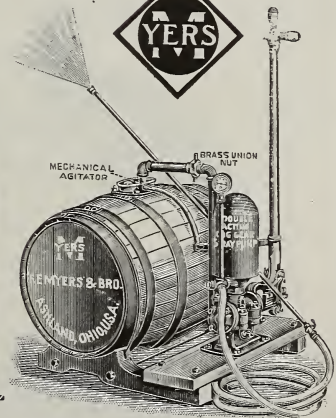
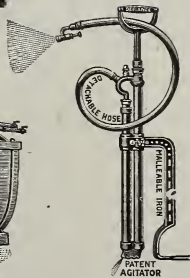
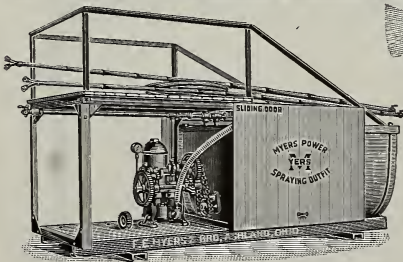
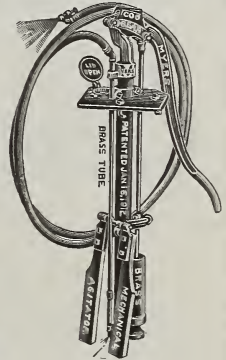
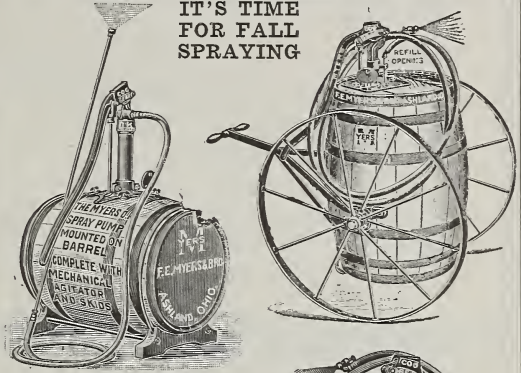
The majority of fruit growers Spray Myers Way, regularly, thoroughly and scientifically for results that are assured—better fruit and larger yields. Others spray only intermittently and are more or less indifferent as to equipment, right methods and spraying seasons—their returns gauge up to their spraying standards.

Year after year, for over 25 years, we have been building **MYERS SPRAY PUMPS**, perfecting wherever possible and adding many new and proven outfits to aid the man that sprays and makes it pay to **Spray Myers Way**.

The line is now complete and includes **Myers Bucket, Barrel and Power Outfits**, fully equipped with tested hose, standard Nozzles and Fittings—ready to spray.

Our Catalog No. SP13 shows all styles of **Myers Spray Pumps** for every spraying requirement, and also contains valuable spraying information. Ask for a copy—mailed to interested parties. Write Department S.

IT'S TIME
FOR FALL
SPRAYING

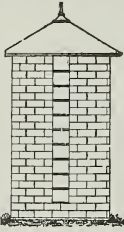


F. E. MYERS & BRO.

ASHLAND PUMP AND HAY TOOL WORKS

200 W. Fourth St.
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LIKE THE "ROCK OF GIBRALTAR"



—"without a crack anywhere and keeping the ensilage perfectly, right up to the edge all around"—this is the statement of Mr. W. R. Spann, of Shelbyville's famous "Burr Oak" Farms, while speaking of his

Perfect Reinforced Cement Silos

Storms, wind and weather cannot destroy "Perfect" Silos. Made of everlasting cement blocks, reinforced with wire and steel rods. Absolutely fireproof. Guaranteed not to crack. Write for illustrated, descriptive booklet giving the opinions of leading farmers and dairymen.

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Write for terms and free booklet.

The PERFECT REINFORCED CEMENT SILO & CISTERN CO.
DELAWARE, OHIO.

General Sales Agents, Hocking Valley Ensilage Cutters.

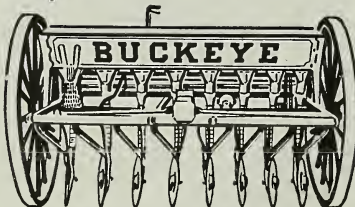
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DIXIE BRAND

For QUALITY and SERVICE write direct to
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a wise buy"*



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*The American Seeding Machine Co.
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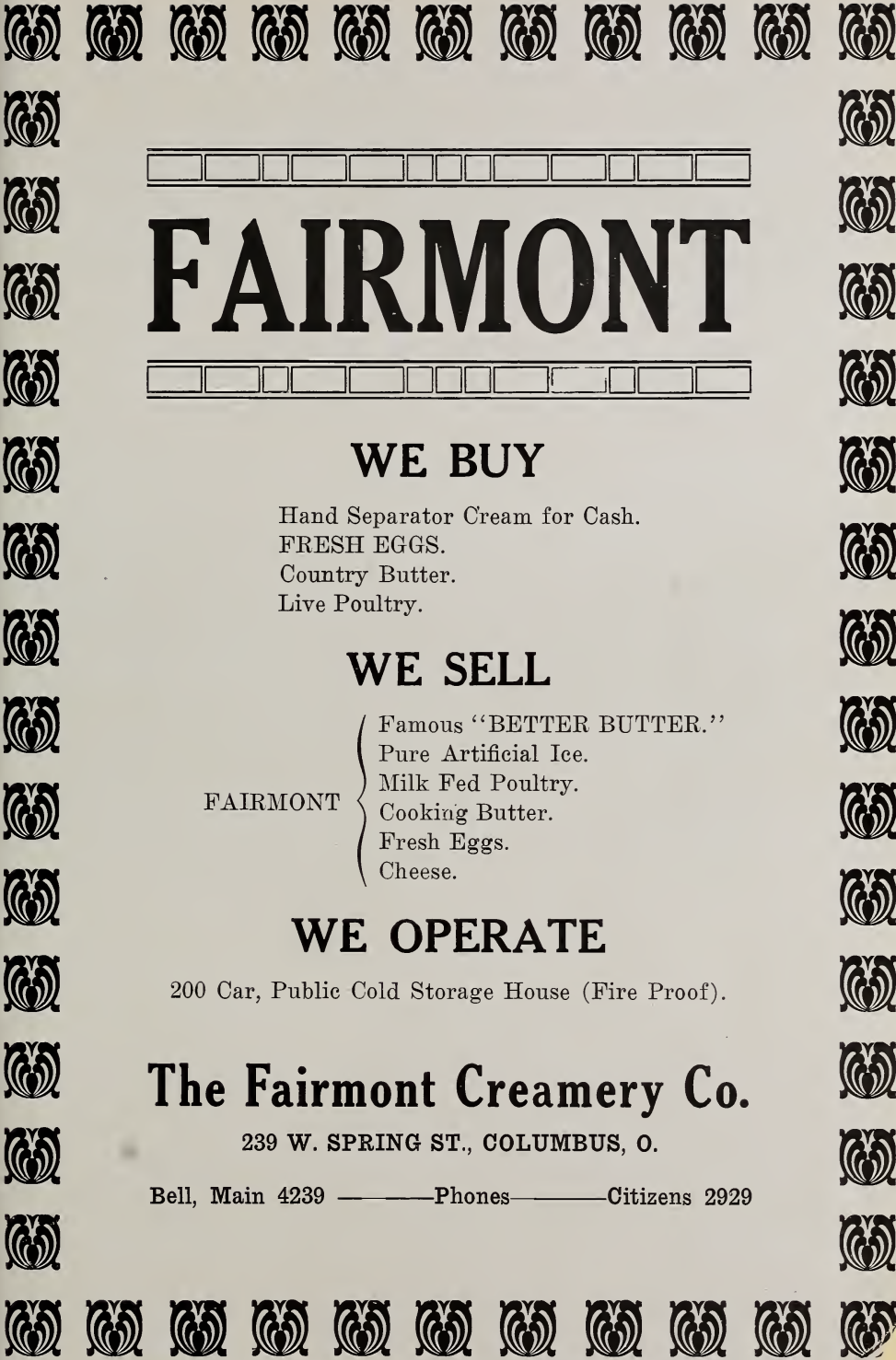
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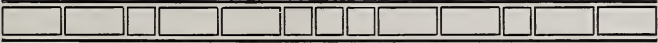
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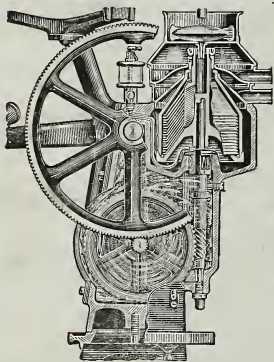
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